

# SEQUENCE LISTING

<110> Falco, S. Carl  
Famodu, Layo O.  
Orozco, Buddy  
Schwaber, James S.

<120> Plant Aminoacyl-tRNA Synthetase

<130> BB-1193

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<150> 60/093,530

<151> July 21, 1998

<160> 37

<170> Microsoft Office 97

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<211> 528

<212> DNA

<213> Zea mays

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<211> 175

<212> PRT

<213> Zea mays

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Phe Asn Arg Lys Arg Leu Lys Gly Glu Asn Gly Leu Asp Asp Thr Leu
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Leu Ala Pro Phe Thr Pro Phe Leu Thr Asp Asn Ile Tyr Leu Lys Leu
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Leu Pro His Ile Pro Lys Glu Leu Gln Ser Ala Asp Pro Arg Ser Val
      85              90              95

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His Phe Leu Pro Phe Pro Asp Val Arg Glu Glu Leu Phe Asp Glu Glu  
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Val Glu Arg Arg Val Gly Arg Met Gln Arg Val Ile Glu Leu Ala Arg  
115 120 125

Val Ser Arg Glu Arg Arg Ala Ile Gly Leu Lys Gln Pro Leu Lys Thr  
130 135 140

Leu Val Val Ile His Ser Asp Pro Gln Tyr Leu Glu Asp Val Lys Ser  
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Leu Glu Lys Tyr Ile Ser Glu Glu Leu Asn Val Arg Asp Leu Val  
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<213> Oryza sativa

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Asp Gly Tyr Arg Leu Tyr Thr Val Val Pro Tyr Leu Leu Lys Phe Leu  
35 40 45  
Asp Asn Leu Thr Asn Ile Tyr Val Arg Phe Asn Arg Lys Arg Leu Lys  
50 55 60  
Gly Arg Ser Gly Glu Glu Asp Cys Arg Ile Ala Leu Ser Thr Leu Tyr  
65 70 75 80  
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Phe Thr Glu Val Leu Tyr Gln Asn Met Arg  
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<212> DNA  
<213> Triticum aestivum

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35 40 45  
Val Asp Asp Asp Gly His Phe Ile Glu Lys Ile Ser Gln Phe Lys Gly  
50 55 60  
Arg His Val Lys Glu Ala Asp Lys Asp Ile Ile Asn Ala Val Lys Asp  
65 70 75 80

Lys Gly Arg Leu Val Ser Lys Gly Ser Ile Glu His Ser Tyr Pro Tyr  
 85 90 95  
 Cys Trp Arg Ser Gly Thr Pro Leu Ile Tyr Arg Ala Val Pro Ser Trp  
 100 105 110  
 Phe Ile Lys Val Glu Lys Ile Arg Asp Gln Leu Leu Glu Cys Asn Lys  
 115 120 125  
 Glu Thr Tyr Trp Val Pro Asp Tyr Val Lys Glu Lys Arg Phe His Asn  
 130 135 140  
 Trp Leu Glu Gly Ala Arg Asp Trp Ala Val Ser Arg Ser Arg Phe Trp  
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 Gly Thr Pro Leu Pro Val Trp Ile Ser Gln Asp Gly Glu  
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 <211> 2175  
 <212> DNA  
 <213> Zea mays

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 cgcagctctc gaagaatgcg aagaagagag aggagaagag gaagaagctg gaagaggagc 240  
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<212> PRT  
<213> Zea mays

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35 40 45  
Asn Pro Pro Pro Ala Gly Glu Gly Gly Glu Glu Pro Gln Leu Ser Lys  
50 55 60  
Asn Ala Lys Lys Arg Glu Glu Lys Arg Lys Lys Leu Glu Glu Glu Arg  
65 70 75 80  
Arg Leu Lys Glu Glu Glu Lys Lys Asn Lys Ala Ala Ala Ala Ser Gly  
85 90 95  
Lys Pro Gln Lys Ala Ser Ala Ala Asp Asp Asp Asp Met Asp Pro Thr  
100 105 110  
Gln Tyr Tyr Glu Asn Arg Leu Lys Ala Leu Asp Ser Leu Lys Ala Thr  
115 120 125  
Gly Val Asn Pro Tyr Pro His Lys Phe Pro Val Gly Ile Ser Val Pro  
130 135 140  
Glu Tyr Ile Glu Lys Tyr Arg Thr Leu Ser Glu Gly Glu Lys Leu Thr  
145 150 155 160  
Asp Val Ala Glu Cys Leu Ala Gly Arg Ile Met Asn Lys Arg Thr Ser  
165 170 175  
Ser Ser Lys Leu Phe Phe Tyr Asp Leu Tyr Gly Gly Gly Met Lys Val  
180 185 190  
Gln Val Met Ala Asp Ala Arg Thr Ser Glu Leu Asp Glu Ala Glu Phe  
195 200 205  
Ser Lys Tyr His Ser Gly Val Lys Arg Gly Asp Ile Val Gly Ile Cys  
210 215 220  
Gly Tyr Pro Gly Lys Ser Asn Arg Gly Glu Leu Ser Val Phe Pro Lys  
225 230 235 240  
Arg Phe Val Val Leu Ser Pro Cys Leu His Met Met Pro Arg Gln Lys  
245 250 255  
Gly Glu Gly Ser Ala Val Pro Val Pro Trp Thr Pro Gly Met Gly Arg  
260 265 270

Asn Ile Glu Asn Tyr Val Leu Arg Asp Gln Glu Thr Arg Tyr Arg Gln  
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 Arg Tyr Leu Asp Leu Met Val Asn His Glu Val Arg His Ile Phe Lys  
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 Thr Arg Ser Lys Ile Val Ser Phe Ile Arg Lys Phe Leu Asp Asp Arg  
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 Glu Phe Leu Glu Val Glu Thr Pro Met Met Asn Met Ile Ala Gly Gly  
 325 330 335  
 Ala Ala Ala Arg Pro Phe Val Thr His His Asn Glu Leu Asn Met Arg  
 340 345 350  
 Leu Phe Met Arg Ile Ala Pro Glu Leu Tyr Leu Lys Glu Leu Val Val  
 355 360 365  
 Gly Gly Leu Asp Arg Val Tyr Glu Ile Gly Lys Gln Phe Arg Asn Glu  
 370 375 380  
 Gly Ile Asp Leu Thr His Asn Pro Glu Phe Thr Thr Cys Glu Phe Tyr  
 385 390 395 400  
 Met Ala Tyr Ala Asp Tyr Asn Asp Leu Met Glu Leu Thr Glu Thr Met  
 405 410 415  
 Leu Ser Gly Met Val Lys Asp Leu Thr Gly Gly Tyr Lys Ile Lys Tyr  
 420 425 430  
 His Ala Asn Gly Val Thr Asn Pro Pro Ile Glu Ile Asp Phe Thr Pro  
 435 440 445  
 Pro Phe Arg Arg Ile Asp Met Ile Lys Asp Leu Glu Ala Met Ala Asn  
 450 455 460  
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 465 470 475 480  
 Ile Glu Ala Cys Val Lys Tyr Asp Val Lys Cys Pro Pro Pro Gln Thr  
 485 490 495  
 Thr Ser Arg Leu Leu Asp Lys Leu Val Gly His Phe Leu Glu Glu Thr  
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 Cys Val Asn Pro Thr Phe Ile Ile Asn His Pro Glu Ile Met Ser Pro  
 515 520 525  
 Leu Ala Lys Trp His Arg Ser Arg Pro Gly Leu Thr Glu Arg Phe Glu  
 530 535 540  
 Leu Phe Val Asn Lys His Glu Val Cys Asn Ala Tyr Thr Glu Leu Asn  
 545 550 555 560  
 Asp Pro Val Val Gln Arg Gln Arg Phe Glu Glu Gln Leu Lys Asp Arg  
 565 570 575  
 Gln Ser Gly Asp Asp Glu Ala Met Ala Leu Asp Glu Thr Phe Cys Thr  
 580 585 590

Ala Leu Glu Tyr Gly Leu Ala Pro Thr Gly Gly Trp Gly Leu Gly Ile  
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 <213> Oryza sativa

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 <212> PRT  
 <213> Oryza sativa

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 35 40 45  
 Gly Gly Leu Asp Arg Val Tyr Glu Ile Gly Lys Gln Phe Arg Asn Glu  
 50 55 60  
 Gly Ile Asp Leu Thr His Asn Pro Glu Phe Thr Thr Cys Glu Phe Tyr  
 65 70 75 80  
 Met Ala Tyr Ala Asp Tyr Asn Asp Leu Ile Glu Leu Thr Glu Thr Met  
 85 90 95  
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 ggtggcaggc ctaagtatcc agatcaaatg tctctccctt gagacaactg ctggtttgtt 1440  
 ggacacatgc ttgaagtatg

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ggataaaactt gttgggtcact ttttgggaaga gacgtgtgta aatcctacat tcatcataaa 1500
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<212> PRT
<213> Glycine max

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Lys Asn Lys Gln Lys Glu Glu Glu Arg Lys Arg Lys Glu Glu Asp Lys
      35              40              45

Ala Lys Lys Ala Ala Glu Met Gln Lys Ala Lys Asp Asn Lys Ser Ala
      50              55              60

Pro Ala Asp Glu Asp Asp Met Asp Pro Thr Gln Tyr Leu Glu Asn Arg
      65              70              75              80

Leu Lys Tyr Leu Ala Val Gln Lys Ala Glu Gly Asn Asn Pro Tyr Pro
      85              90              95

His Lys Phe Phe Val Thr Met Ser Leu Asp Gln Tyr Ile Lys Glu Tyr
      100             105             110

Gly Gly Leu Ser Asn Gly Gln His Leu Glu Asp Val Ser Val Ser Met
      115             120             125

Ala Gly Arg Ile Met His Lys Arg Thr Ser Gly Ser Lys Leu Val Phe
      130             135             140

Tyr Asp Leu His Ser Gly Gly Phe Lys Val Gln Val Met Ala Asp Ala
      145             150             155             160

Ser Lys Ser Asp Leu Asp Glu Ala Glu Phe Ser Lys Phe His Ser Asn
      165             170             175

Val Lys Arg Gly Asp Ile Val Gly Ile Thr Gly Phe Pro Gly Lys Ser
      180             185             190

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Lys Lys Gly Glu Leu Ser Ile Phe Pro Lys Thr Phe Val Leu Leu Ser  
 195 200 205  
 His Cys Leu His Met Met Pro Arg Gln Lys Ser Ala Ala Ala Ala Asp  
 210 215 220  
 Asn Ala Asn Leu Lys Lys Asn Pro Trp Val Pro Gly Ser Thr Arg Asn  
 225 230 235 240  
 Pro Glu Thr Tyr Ile Leu Lys Asp Gln Glu Thr Arg Tyr Arg Arg His  
 245 250 255  
 Leu Asp Leu Met Leu Asn Pro Glu Val Arg Glu Ile Phe Lys Thr Arg  
 260 265 270  
 Ser Lys Ile Ile Cys Tyr Ile Arg Arg Phe Leu Asp Asp Leu Asp Phe  
 275 280 285  
 Leu Glu Val Glu Thr Pro Met Met Asn Met Ile Ala Gly Gly Ala Ala  
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 Ala Arg Pro Phe Val Thr His His Asn Asp Leu Asn Met Arg Leu Phe  
 305 310 315 320  
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 325 330 335  
 Leu Asp Arg Val Tyr Glu Ile Gly Lys Gln Phe Arg Asn Glu Gly Ile  
 340 345 350  
 Asp Leu Thr His Asn Pro Glu Phe Thr Thr Cys Glu Phe Tyr Met Ala  
 355 360 365  
 Tyr Lys Asp Tyr Asn Asp Leu Met Asp Ile Thr Glu Gln Met Leu Ser  
 370 375 380  
 Gly Met Val Lys Glu Leu Thr Xaa Xaa Xaa Tyr Lys Ile Lys Tyr His  
 385 390 395 400  
 Ala Asp Gly Ile Asp Lys Glu Pro Ile Glu Ile Asp Phe Thr Pro Pro  
 405 410 415  
 Phe Arg Arg Ile Asp Met Ile Asp Glu Leu Glu Lys Val Ala Gly Leu  
 420 425 430  
 Ser Ile Pro Lys Asp Leu Ser Ser Glu Glu Ala Asn Gln Tyr Leu Lys  
 435 440 445  
 Asp Thr Cys Leu Lys Tyr Glu Ile Lys Cys Pro Pro Pro Glu Thr Thr  
 450 455 460  
 Ala Arg Leu Leu Asp Lys Leu Val Gly His Phe Leu Glu Glu Thr Cys  
 465 470 475 480  
 Val Asn Pro Thr Phe Ile Ile Asn His Pro Glu Ile Met Ser Pro Leu  
 485 490 495  
 Ala Lys Trp His Arg Ser Lys Arg Gly Leu Thr Glu Arg Phe Glu Leu  
 500 505 510

Phe Val Asn Lys His Glu Leu Cys Asn Ala Tyr Thr Glu Leu Asn Asp  
 515 520 525

Pro Val Val Gln Arg Gln Arg Phe Ala Glu Gln Leu Lys Asp Arg Gln  
 530 535 540

Ser Gly Asp Asp Glu Ala Met Ala Phe Asp Glu Thr Phe Cys Thr Ala  
 545 550 555 560

Leu Glu Tyr Gly Leu Pro Pro Thr Gly Gly Trp Gly Leu Gly Ile Asp  
 565 570 575

Arg Leu Thr Met Leu Leu Thr Asp Ser Gln Asn Ile Lys Glu Val Leu  
 580 585 590

Leu Phe Pro Ala Met Lys Pro  
 595

<210> 15  
 <211> 702  
 <212> DNA  
 <213> Triticum aestivum

<400> 15  
 gaacgaggct tgacaagcta gtggggccatt tcttgaggga aacatgtgtg aacccaacat 60  
 ttattatcaa ccaccagag ataatgagtc cattggcaaa gtggcatagg tcccgacctg 120  
 gggttgacaga aagggttgag ctctttgtta acaaacacga ggtgtgcaat gcctacactg 180  
 agttgaacya tctgtttgtg caaaggcaac ggtttgaggga acaactaaag gatcgtcaat 240  
 ctggtgatga tgaagctatg gctttggacg aaacattctg caactgccctc gagtatgggc 300  
 tgcctccgac aggtgggttg gggttgggaa ttgatcgctt tacaatgatg ctgacagatt 360  
 ccagaacat caaggaagtt ctcttgttcc cggccatgaa gccccaaagag tagctgtttg 420  
 caagcccatc aacagagtaa ttttgttttg ctgcgctgag gttggaggat tatgacatgt 480  
 gacaatacaa cgagttttta ctgtgcogga caaaacatgt gtagcagcac tggaggtaca 540  
 agctactttt gcgtggaagg gttgttgaaa atttgaactc cggttaggag gaagagttag 600  
 gcatatgaag caagaatcag aaggagacag tgtgtacat gtttgccttg tttctttttg 660  
 gaagatcaaa atttagtgct tgggtattgtt atacactttt tt 702

<210> 16  
 <211> 136  
 <212> PRT  
 <213> Triticum aestivum

<400> 16  
 Thr Arg Leu Asp Lys Leu Val Gly His Phe Leu Glu Glu Thr Cys Val  
 1 5 10 15

Asn Pro Thr Phe Ile Ile Asn His Pro Glu Ile Met Ser Pro Leu Ala  
 20 25 30

Lys Trp His Arg Ser Arg Pro Gly Leu Thr Glu Arg Phe Glu Leu Phe  
 35 40 45

Val Asn Lys His Glu Val Cys Asn Ala Tyr Thr Glu Leu Asn Asp Pro  
 50 55 60

Val Val Gln Arg Gln Arg Phe Glu Glu Gln Leu Lys Asp Arg Gln Ser  
 65 70 75 80

Gly Asp Asp Glu Ala Met Ala Leu Asp Glu Thr Phe Cys Thr Ala Leu  
 85 90 95

Glu Tyr Gly Leu Pro Pro Thr Gly Gly Trp Gly Leu Gly Ile Asp Arg  
 100 105 110

Leu Thr Met Met Leu Thr Asp Ser Gln Asn Ile Lys Glu Val Leu Leu  
 115 120 125

Phe Pro Ala Met Lys Pro Gln Glu  
 130 135

<210> 17  
 <211> 1430  
 <212> DNA  
 <213> Zea mays

<400> 17  
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 ggctctccc cgcgcgccat ttcccccttc accaccctcc cctctacta ttcttcgcgt 120  
 cctcaccgoc gctctctcgc ccgcttcttc tccgtcgctt cggcacccgg cggagcgaaa 180  
 gggcaccgac cggcggcctc cggcgttgag gtggggcggc tcaagatcgc gcgcgaggat 240  
 gttgtgaagg aggatgatcc gacaaacaa cgtgcccaga atatcttttc gaagatcggc 300  
 ctgcagctgc acaggaggga taaccatccc cttgggattt tgaagaacac aatttatgat 360  
 taatttgaca agaacttcac tgggagattt gacaagtttg atgaccttg cctcttgggt 420  
 ttgttcaagc agaattttga tgatgtcttg gtccctcttg accatgtaag ccggagttac 480  
 aacgacacat attatgttga tggtaaaaca gtcttaaggt gtcataccag tgctcatcaa 540  
 gctgagctgc taaggcatgg acatacacac ttctttgtaa ctggagatgt ttaccgtagg 600  
 gattccattg attcaactca ctatcctgtc tcccatcaga tgggaagggt ccgtgtcttc 660  
 tctcargatg aatggtcagg gtctcgcctg ggtgggacag catatgcagc tgcagaactc 720  
 aagaaaacac tgggaaggctt ggcaagacat ctatttggtg ctgtagagat gcgatgggtt 780  
 gacacttact tcccatttac caaccatcc tttgagctcg aatatactt tcaggatgat 840  
 tgggttggagg ttttgggggtg tggagtcaac gaggcaggaaa ttttgaaaag aaatggcagg 900  
 agggacacat tggcatgggc ctttggattg ggttggagc gccttgcaat ggtccttttc 960  
 gacattccag atattcgaat attctggctg aatgataaac gggtcacgtc ccagttctca 1020  
 gaaggcaagc ttggtgtcaa gttaaacgca ttttcaaagt ttctccttg ttacaaggat 1080  
 attgagttctt ggatcaatga tgcatttaca gaaaacaact tatgtgaggt tgtcagagga 1140  
 attgtgtgtg atcttgttga ggaggtaaaa cttattgata atttcacgaa caagaaaggc 1200  
 atgaacagcc attgctatag aatagcctat aggtcagatg aacgctcgtc cacagacgag 1260  
 gagattaaca atcttcagtt gaatgtcagg gaagctgtga aagataaatt ggaagtagag 1320  
 ttgagataga agcagctagc tatgcagtta taccatgaac taaattttgc ctctctttat 1380  
 atgtaaatcc atttaaaatg atttttttgt atctatcaag aaaatgcacc 1430

<210> 18  
 <211> 442  
 <212> PRT  
 <213> Zea mays

<400> 18  
 Arg Thr Ala Arg Cys Trp Leu Leu Arg Ala Arg Val Arg Gly Met Ala  
 1 5 10 15

Thr Leu Pro Met Ala Leu Ser Pro Ala Ala Ile Ser Pro Phe Thr Thr  
 20 25 30

Leu Pro Leu Tyr Tyr Ser Ser Arg Pro His Arg Arg Leu Leu Ala Arg  
 35 40 45

Phe Phe Ser Val Ala Ser Ala Pro Gly Gly Ala Lys Gly His Arg Pro  
 50 55 60

Ala Ala Ser Ala Val Glu Val Gly Gly Val Lys Ile Ala Arg Glu Asp  
 65 70 75 80  
 Val Val Lys Glu Asp Asp Pro Thr Asn Asn Val Pro Asp Asn Ile Phe  
 85 90 95  
 Ser Lys Ile Gly Leu Gln Leu His Arg Arg Asp Asn His Pro Leu Gly  
 100 105 110  
 Ile Leu Lys Asn Thr Ile Tyr Asp Tyr Phe Asp Lys Asn Phe Thr Gly  
 115 120 125  
 Gln Phe Asp Lys Phe Asp Asp Leu Cys Pro Leu Val Ser Val Lys Gln  
 130 135 140  
 Asn Phe Asp Asp Val Leu Val Pro Ser Asp His Val Ser Arg Ser Tyr  
 145 150 155 160  
 Asn Asp Thr Tyr Tyr Val Asp Gly Gln Thr Val Leu Arg Cys His Thr  
 165 170 175  
 Ser Ala His Gln Ala Glu Leu Leu Arg His Gly His Thr His Phe Leu  
 180 185 190  
 Val Thr Gly Asp Val Tyr Arg Arg Asp Ser Ile Asp Ser Thr His Tyr  
 195 200 205  
 Pro Val Phe His Gln Met Glu Gly Phe Arg Val Phe Ser Pro Asp Glu  
 210 215 220  
 Trp Ser Gly Ser Arg Met Gly Gly Thr Ala Tyr Ala Ala Ala Glu Leu  
 225 230 235 240  
 Lys Lys Thr Leu Glu Gly Leu Ala Arg His Leu Phe Gly Ala Val Glu  
 245 250 255  
 Met Arg Trp Val Asp Thr Tyr Phe Pro Phe Thr Asn Pro Ser Phe Glu  
 260 265 270  
 Leu Glu Ile Tyr Phe Gln Asp Asp Trp Leu Glu Val Leu Gly Cys Gly  
 275 280 285  
 Val Thr Glu Gln Glu Ile Leu Lys Arg Asn Gly Arg Arg Asp His Val  
 290 295 300  
 Ala Trp Ala Phe Gly Leu Gly Leu Glu Arg Leu Ala Met Val Leu Phe  
 305 310 315 320  
 Asp Ile Pro Asp Ile Arg Leu Phe Trp Ser Asn Asp Lys Arg Phe Thr  
 325 330 335  
 Ser Gln Phe Ser Glu Gly Lys Leu Gly Val Lys Phe Lys Pro Phe Ser  
 340 345 350  
 Lys Phe Pro Pro Cys Tyr Lys Asp Met Ser Phe Trp Ile Asn Asp Ala  
 355 360 365  
 Phe Thr Glu Asn Asn Leu Cys Glu Val Val Arg Gly Ile Ala Gly Asp  
 370 375 380

Leu Val Glu Glu Val Lys Leu Ile Asp Asn Phe Thr Asn Lys Lys Gly  
385 390 395 400

Met Thr Ser His Cys Tyr Arg Ile Ala Tyr Arg Ser Met Glu Arg Ser  
405 410 415

Leu Thr Asp Glu Glu Ile Asn Asn Leu Gln Leu Asn Val Arg Glu Ala  
420 425 430

Val Lys Asp Lys Leu Glu Val Glu Leu Arg  
435 440

<210> 19  
<211> 1000  
<212> DNA  
<213> Oryza sativa

<400> 19  
gcacgagtggt taccaacagc atcctgctcg ggattcacac gatacathtt ttcttgaagc 60  
ccctgcccgtt acaaaacaat tgcctgaaga ttatcttgag aaagtaaagg aagttcatca 120  
acgtgggtggt tatggctcca agggatatgg ctatgactgg aaacgggatg aagcagagaa 180  
aaacctgctt cgtaccacac ctacagcagt ttcaacaagg atgctataca agctagcaca 240  
agagaaaact tttgccctta agaggtacta ctccattgat cgtgttttcc gcaatgaagc 300  
tgtggaccgg actcatcttg cggaattcca ccagattgaa ggtctcattt gtgattatgg 360  
tttgacgctg ggtgatctga ttggtgtatt ggaggatttc ttctcgagtc taggcattgc 420  
aaagctgctt ttcaagcctg cctacaatcc atacaccgag ccgagcatgg aaattttcag 480  
ttaccatgaa ggtttgaaga aatgggtgga agttggtaac tctggcatgt tcagacctga 540  
aatgttaact cccatgggac tgccagaggg tgtaaatggt attgcatggy gtctttcact 600  
agaaaggcca acaatgatcc tttaacggcat cgacaacatt cgagacctct ttggacccaa 660  
ggttgatttc aacctcatca agagcaaccc tctctgccgc ttgggactgc agtaaaacct 720  
tgcaaaaagt ggttggaagt gattaagtaa caagatttgt ttagttgatc agtgggtgaa 780  
cgtgaagaga tcattttctg cttaccttga aacaccaata catgtgcatt tagcagaggt 840  
ttttgtatta cagttttgag tgatatgaga ctaccagcca atttttgtgt gtgtccatat 900  
tcgaataact tgatacatt taattgagca catccaatgt atgaagtggg catctgccgc 960  
tgccggttgc tgaatcaaaa aaaaaaaaaa aaaaaaaaaa 1000

<210> 20  
<211> 237  
<212> PRT  
<213> Oryza sativa

<400> 20  
His Glu Trp Tyr Gln Gln His Pro Ala Arg Asp Ser His Asp Thr Phe  
1 5 10 15

Phe Leu Glu Ala Pro Ala Ala Thr Lys Gln Leu Pro Glu Asp Tyr Leu  
20 25 30

Glu Lys Val Lys Glu Val His Gln Arg Gly Gly Tyr Gly Ser Lys Gly  
35 40 45

Tyr Gly Tyr Asp Trp Lys Arg Asp Glu Ala Glu Lys Asn Leu Leu Arg  
50 55 60

Thr His Thr Thr Ala Val Ser Thr Arg Met Leu Tyr Lys Leu Ala Gln  
65 70 75 80

Glu Lys Pro Phe Ala Pro Lys Arg Tyr Tyr Ser Ile Asp Arg Val Phe  
85 90 95

Arg Asn Glu Ala Val Asp Arg Thr His Leu Ala Glu Phe His Gln Ile  
 100 105 110

Glu Gly Leu Ile Cys Asp Tyr Gly Leu Thr Leu Gly Asp Leu Ile Gly  
 115 120 125

Val Leu Glu Asp Phe Phe Ser Ser Leu Gly Met Ser Lys Leu Arg Phe  
 130 135 140

Lys Pro Ala Tyr Asn Pro Tyr Thr Glu Pro Ser Met Glu Ile Phe Ser  
 145 150 155 160

Tyr His Glu Gly Leu Lys Lys Trp Val Glu Val Gly Asn Ser Gly Met  
 165 170 175

Phe Arg Pro Glu Met Leu Leu Pro Met Gly Leu Pro Glu Gly Val Asn  
 180 185 190

Val Ile Ala Trp Gly Leu Ser Leu Glu Arg Pro Thr Met Ile Leu Tyr  
 195 200 205

Gly Ile Asp Asn Ile Arg Asp Leu Phe Gly Pro Lys Val Asp Phe Asn  
 210 215 220

Leu Ile Lys Ser Asn Pro Leu Cys Arg Leu Gly Leu Gln  
 225 230 235

<210> 21  
 <211> 387  
 <212> DNA  
 <213> Glycine max

<220>  
 <221> unsure  
 <222> (337)

<220>  
 <221> unsure  
 <222> (379)

<400> 21  
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 catgggtgtc cctccaaatg gtggccatct tcacacttta cttaaatgca gaactatgat 120  
 gaaagaaatc ttcttggaat tgggatttga agaaatgcca accaacaatt acgttgaatc 180  
 ttctttcttg aattttgata ctttatttca acctcaacaa catcctgctc gtgatgctca 240  
 cgatactttc ttcttttctg aacctgcac tgccaaatcc attccacaag attattttaga 300  
 aagagtgaata acaatgcatg agaaaggagg gcacggntct attggttga gatacgactg 360  
 gagtggaaac tgagtccana aaaaaaa 387

<210> 22  
 <211> 123  
 <212> PRT  
 <213> Glycine max

<400> 22  
 Ile Ala Asn Gly Ser Trp Lys Glu Lys Ser Phe Lys Ser Leu Asn Leu  
 1 5 10 15

Gly Lys Gly Val Met Gly Val Pro Pro Asn Gly Gly His Leu His Thr  
 20 25 30



Leu Leu Lys Cys Arg Thr Met Met Lys Glu Ile Phe Leu Glu Met Gly  
 35 40 45

Phe Glu Glu Met Pro Thr Asn Asn Tyr Val Glu Ser Ser Phe Trp Asn  
 50 55 60

Phe Asp Thr Leu Phe Gln Pro Gln Gln His Pro Ala Arg Asp Ala His  
 65 70 75 80

Asp Thr Phe Phe Leu Ser Glu Pro Ala Ser Ala Lys Ser Ile Pro Gln  
 85 90 95

Asp Tyr Leu Glu Arg Val Lys Thr Met His Glu Lys Gly Gly His Gly  
 100 105 110

Ser Ile Gly Trp Arg Tyr Asp Trp Ser Gly Asn  
 115 120

<210> 23  
 <211> 1074  
 <212> DNA  
 <213> Triticum aestivum

<400> 23  
 gcaacgagga caacctattg cgataggata tagccaaccg ttgttagagg tccgtgaggc 60  
 aatccagaac atttttctcg agatgggggt cagtgaagatg ccaacgaaca tgtatgtaga 120  
 gagcagcttc tggaattttg atgcactgtt ccagccacaa cagcatcctg ctctgtgattc 180  
 ataacgatacc tttttctcca aagccctgcg tacaacaaca caattacctg atgactatct 240  
 tgagaaagta aagcaagtac atcagctctgg ttgtcatggc tccaaaggat atggttacga 300  
 ttggaagcga gatgaagcag agaaaaacct gcttcgtact cacacaactg cagtttcaac 360  
 aaggatgcta tacaagctag cacaggagaa aacttttgct cctaagagat actattctat 420  
 tgatcgtgtt ttccggaatg aagctgtgga ccgaactcat ctgcagaat tccaccagat 480  
 agaaggtctt atttgtgatt atggtttgac gcttggtgat ctgatagggt tattggagga 540  
 tttcttctcc agactaggca tgtcaaagct gggtttcaaa cctgcctaca acccgtacac 600  
 tgaaccaagc atggaaattt tcagctacca cgatggtctg aagaaatggg tggaaatagg 660  
 caactcaggc atgttcaggc cggaatgtt acttcccatg ggactgccag aggggtgttaa 720  
 tggttatcgca tggggctctt cgcttgaaag gccacaatg attctgtatg ggattgacaa 780  
 catacgtgat ctctttgggc caaaggctga ctccaatctg atcaagagca gcccgatttg 840  
 ccgcttgggg ctgtagtgtg gtgagcttga tagaacttta tctggatgtc tggatgcgaa 900  
 ggatgtttat ttgtggttat acctttgaaa accagtactt gtgcatttaa cagagggagt 960  
 gcagaaatac acacatgtag ctctgaattg caaaaaaaaa aaaaaaaaaa aaaaaaaaaa 1020  
 aataaaaaaa aaacaaaaaa aaaaaaaaaa tactcgaggg ggggccgtac caca 1074

<210> 24  
 <211> 284  
 <212> PRT  
 <213> Triticum aestivum

<400> 24  
 His Glu Gly Gln Pro Ile Ala Ile Gly Tyr Ser Gln Pro Leu Leu Glu  
 1 5 10 15

Val Arg Glu Ala Ile Gln Asn Ile Phe Leu Glu Met Gly Phe Ser Glu  
 20 25 30

Met Pro Thr Asn Met Tyr Val Glu Ser Ser Phe Trp Asn Phe Asp Ala  
 35 40 45

Leu Phe Gln Pro Gln Gln His Pro Ala Arg Asp Ser His Asp Thr Phe  
 50 55 60  
 Phe Leu Lys Ala Pro Ala Thr Thr Thr Gln Leu Pro Asp Asp Tyr Leu  
 65 70 75 80  
 Glu Lys Val Lys Gln Val His Gln Ser Gly Gly His Gly Ser Lys Gly  
 85 90 95  
 Tyr Gly Tyr Asp Trp Lys Arg Asp Glu Ala Glu Lys Asn Leu Leu Arg  
 100 105 110  
 Thr His Thr Thr Ala Val Ser Thr Arg Met Leu Tyr Lys Leu Ala Gln  
 115 120 125  
 Glu Lys Thr Phe Ala Pro Lys Arg Tyr Tyr Ser Ile Asp Arg Val Phe  
 130 135 140  
 Arg Asn Glu Ala Val Asp Arg Thr His Leu Ala Glu Phe His Gln Ile  
 145 150 155 160  
 Glu Gly Leu Ile Cys Asp Tyr Gly Leu Thr Leu Gly Asp Leu Ile Gly  
 165 170 175  
 Val Leu Glu Asp Phe Phe Ser Arg Leu Gly Met Ser Lys Leu Arg Phe  
 180 185 190  
 Lys Pro Ala Tyr Asn Pro Tyr Thr Glu Pro Ser Met Glu Ile Phe Ser  
 195 200 205  
 Tyr His Asp Gly Leu Lys Lys Trp Val Glu Ile Gly Asn Ser Gly Met  
 210 215 220  
 Phe Arg Pro Glu Met Leu Leu Pro Met Gly Leu Pro Glu Gly Val Asn  
 225 230 235 240  
 Val Ile Ala Trp Gly Leu Ser Leu Glu Arg Pro Thr Met Ile Leu Tyr  
 245 250 255  
 Gly Ile Asp Asn Ile Arg Asp Leu Phe Gly Pro Lys Val Asp Phe Asn  
 260 265 270  
 Leu Ile Lys Ser Ser Pro Ile Cys Arg Leu Gly Leu  
 275 280

<210> 25  
 <211> 1939  
 <212> DNA  
 <213> Zea mays

3400> 25  
 gtcgggaatt cccgggtcga cccacgcgtc cgtgctgtcc cattggcaac ttgcgcgcta 60  
 ctctgactcg agtggcgcgt actctacccc acccacaccc ttccgcccgc cgccactaaa 120  
 cccctagcggg acaccgcct tgctcgcgcc gccctactct ctcaactctc tcggaccccc 180  
 ggtggccggt gcagagctgc gcgaccgaga accgaatctg tgagccatgt cgaccaacaa 240  
 gggcagcgcg gccaaaggcg gcggaggaa gaagaaggag gtgaagaagg agacgaagct 300  
 cgggatggcc tataagaagg acgacaactt cggggagtgg tactccgagg ttgttgtaa 360  
 cagtgaatg attgagtact atgacatttc tggttgttat atattgaggc catgggcat 420  
 ggaaatctgg gagctactga aagaattctt tgatgcagaa attaaaaagc tgaagctcaa 480  
 accatattat ttccctttgt ttgttactga gaatgttcta cagaaggaaa aggaccacat 540

tgaggggcttt	gcacotgaggy	tagcttgggt	taataaatct	gggaaatctg	acctggaagc	600
acogattgca	atocggcccca	caagtggagac	tgtcatgtat	cogtacttct	ccaaatggat	660
aagaagccac	cgagaacttac	ccttgagggtg	taatcaatgg	tgtaatgttg	ttagatggga	720
gttttagcaat	ccaaactcctt	tcataaggag	cogtgaattt	ctgtggcaag	aggggcatac	780
tgtttttgog	actaaagaag	aggcagatga	agaggttctc	caaataattgg	aactgtaccg	840
aaggatatac	gaagaatttt	tagcagttcc	agtttccaaa	gggagaaaaa	gcgagatgga	900
aaaatttgca	ggtggccttt	ataccaccag	cgttgaggcc	ttcattccaa	acactgggtcg	960
tggcatacaa	ggcgcaacct	caractgtct	tggtcaaaaac	tttgccaaga	tgtttgatat	1020
cacttttgag	aatgagaaaag	gtgttaggga	aatgggttgg	caaaaactctt	gggcctacac	1080
aaoccgctcg	attggagtgga	tgttgatgac	acatgggtgat	gacaaaggct	tagtattacc	1140
acaaagggtg	gcaccaatcc	aggtaatcgt	gatttcagtg	ccttataagg	acgttgacac	1200
aactgccata	aaggggagcct	gcgaatcaac	tgtttacaca	ctcgatcaat	ctgggattag	1260
aggggatcag	gacacccgtg	aaaattactc	tcaggttgg	aagtattccc	actgggaaat	1320
gaaaggtggt	ccattgagaa	ttgagattgg	tcbaaaagat	ctggcaaaaca	aacaggtgcg	1380
tggtgtccgc	cgggacaacg	gtgcaaaggt	tgacatccct	gtgaccaatt	tggttgaaga	1440
ggttaaagtg	ttactggatg	agattcaaaa	aaatctgttc	aaaacagccc	aagaaaagag	1500
agatgcctgt	gttcatgtcg	tgaacacttg	ggatgaattc	acaactgctc	tgaataacaa	1560
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gacaaaaggg	gaacttggag	ctgcgaaaac	attgtgtact	ccatttgagc	agccagaact	1680
tcagaaggt	acctgtgct	ttgcatctgg	aaagccagcg	aagaagtggg	cgttctgggg	1740
cogcagctac	tgattgcctg	tgtgtggatt	atttctggat	tcagttctag	tgagttatgt	1800
agctttgaag	tgtcggatac	aaatccaaaa	atccatttac	attgcgtttt	acatcgactt	1860
gcagttctca	tgtcatcact	gctgacaaaa	gccatcgatt	tcctgtggac	catgctattc	1920
gagtttgaat	gttgcaagg					1939

<210> 26  
 <211> 383  
 <212> PRT  
 <213> Zea mays

<400> 26  
 Pro Ile Ala Ile Arg Pro Thr Ser Glu Thr Val Met Tyr Pro Tyr Phe  
 1 5 10 15

Ser Lys Trp Ile Arg Ser His Arg Asp Leu Pro Leu Arg Cys Asn Gln  
 20 25 30

Trp Cys Asn Val Val Arg Trp Glu Phe Ser Asn Pro Thr Pro Phe Ile  
 35 40 45

Arg Ser Arg Glu Phe Leu Trp Gln Glu Gly His Thr Ala Phe Ala Thr  
 50 55 60

Lys Glu Glu Ala Asp Glu Glu Val Leu Gln Ile Leu Glu Leu Tyr Arg  
 65 70 75 80

Arg Ile Tyr Glu Glu Phe Leu Ala Val Pro Val Ser Lys Gly Arg Lys  
 85 90 95

Ser Glu Met Glu Lys Phe Ala Gly Gly Leu Tyr Thr Thr Ser Val Glu  
 100 105 110

Ala Phe Ile Pro Asn Thr Gly Arg Gly Ile Gln Gly Ala Thr Ser His  
 115 120 125

Cys Leu Gly Gln Asn Phe Ala Lys Met Phe Asp Ile Thr Phe Glu Asn  
 130 135 140

Glu Lys Gly Val Arg Glu Met Val Trp Gln Asn Ser Trp Ala Tyr Thr  
 145 150 155 160

Thr Arg Ser Ile Gly Val Met Val Met Thr His Gly Asp Asp Lys Gly  
 165 170 175  
 Leu Val Leu Pro Pro Lys Val Ala Pro Ile Gln Val Ile Val Ile Ser  
 180 185 190  
 Val Pro Tyr Lys Asp Ala Asp Thr Thr Ala Ile Lys Gly Ala Cys Glu  
 195 200 205  
 Ser Thr Val Tyr Thr Leu Asp Gln Ser Gly Ile Arg Ala Asp Gln Asp  
 210 215 220  
 Thr Arg Glu Asn Tyr Ser Pro Gly Trp Lys Tyr Ser His Trp Glu Met  
 225 230 235 240  
 Lys Gly Val Pro Leu Arg Ile Glu Ile Gly Pro Lys Asp Leu Ala Asn  
 245 250 255  
 Lys Gln Val Arg Val Val Arg Arg Asp Asn Gly Ala Lys Val Asp Ile  
 260 265 270  
 Pro Val Thr Asn Leu Val Glu Glu Val Lys Val Leu Leu Asp Glu Ile  
 275 280 285  
 Gln Lys Asn Leu Phe Lys Thr Ala Gln Glu Lys Arg Asp Ala Cys Val  
 290 295 300  
 His Val Val Asn Thr Trp Asp Glu Phe Thr Thr Ala Leu Asn Asn Lys  
 305 310 315 320  
 Lys Leu Ile Leu Ala Pro Trp Cys Asp Glu Glu Glu Ile Glu Lys Asp  
 325 330 335  
 Val Lys Thr Arg Thr Lys Gly Glu Leu Gly Ala Ala Lys Thr Leu Cys  
 340 345 350  
 Thr Pro Phe Glu Gln Pro Glu Leu Pro Glu Gly Thr Leu Cys Phe Ala  
 355 360 365  
 Ser Gly Lys Pro Ala Lys Lys Trp Ser Phe Trp Gly Arg Ser Tyr  
 370 375 380

<210> 27  
 <211> 697  
 <212> DNA  
 <213> Glycine max

<220>  
 <221> unsure  
 <222> (11)

<220>  
 <221> unsure  
 <222> (40)

<220>  
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<220>  
 <221> unsure  
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<220>  
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 <222> (632)

<220>  
 <221> unsure  
 <222> (694)

<400> 27  
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 tgaaaacttaa tcagtggtgc aatgttgtaa natgggagtt cagcaacccc actccatnca 120  
 tcaggagtcg cgagtttctt tggcaagaag ggcacactgc ttttgcaaca aaggatgaag 180  
 canatgcaga agttcttgag attctggaat tatataggcg tatatacgaa gagtatttgg 240  
 cagtttcctgt cataaagggt aagaanagtg agcttgagaa gtttgctggt ggactctaca 300  
 ctanbaatgt tgaggcattt attccaaaca ctggctcgtg tatccaaggt gcaacttctc 360  
 attgtttggg ccaaaatttt gctaaaatgt ttgagataaa ctttgaaaat gaaaagggag 420  
 agaaagcaat ggtctggcag aattcatggg cctatagtag tcgaactatt ggggtcatgg 480  
 tgatggttca tggatgatgac aangggattg gtactacctc cttaaagtagc atcagtacaa 540  
 gttattgtga ttctgtgcc ttacaaagat gccgatactc aagggaatctt tgatgcctgt 600  
 ctgcactgtg aatacattga tgaagcagga tngcgctgag cagatctaga gatatatctc 660  
 ctgggatgaga tccactggga atgaaagggt ctcnaga 697

<210> 28  
 <211> 173  
 <212> PRT  
 <213> Glycine max

<210>  
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<220>  
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 <222> (30)

<220>  
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 <222> (39)

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<220>  
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<220>  
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 <222> (101)

<220>  
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 <222> (167)

<400> 28  
 Glu Thr Val Met Tyr Pro Tyr Tyr Ser Lys Trp Ile Xaa Xaa His Arg  
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 Asp Leu Pro Leu Lys Leu Asn Gln Trp Cys Asn Val Val Xaa Trp Glu  
 20 25 30  
 Phe Ser Asn Pro Thr Pro Xaa Ile Arg Ser Arg Glu Phe Leu Trp Gln  
 35 40 45  
 Glu Gly His Thr Ala Phe Ala Thr Lys Asp Glu Ala Xaa Ala Glu Val  
 50 55 60  
 Leu Glu Ile Leu Glu Leu Tyr Arg Arg Ile Tyr Glu Glu Tyr Leu Ala  
 65 70 75 80  
 Val Pro Val Ile Lys Gly Lys Xaa Ser Glu Leu Glu Lys Phe Ala Gly  
 85 90 95  
 Gly Leu Tyr Thr Xaa Asn Val Glu Ala Phe Ile Pro Asn Thr Gly Arg  
 100 105 110  
 Gly Ile Gln Gly Ala Thr Ser His Cys Leu Gly Gln Asn Phe Ala Lys  
 115 120 125  
 Met Phe Glu Ile Asn Phe Glu Asn Glu Lys Gly Glu Lys Ala Met Val  
 130 135 140  
 Trp Gln Asn Ser Trp Ala Tyr Ser Thr Arg Thr Ile Gly Val Met Val  
 145 150 155 160  
 Met Val His Gly Asp Asp Xaa Gly Ile Gly Thr Thr Ser  
 165 170

<210> 29  
 <211> 564  
 <212> DNA  
 <213> Triticum aestivum

<220>  
 <221> unsure  
 <222> (439)

<220>  
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<220>  
 <221> unsure  
 <222> (564)

<400> 29  
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 ttttgcaact aaagaggagg cagatgaaga ggtcctccaa atattggaac tctacaggag 120  
 aatatatgaa gaatttttag cagttccagt gtccaaaggg aggaaaagtg agatggaaaa 180  
 gtttgctggt ggactttata caaccagtgt agaggccttc attccaaata ctggccgtgg 240  
 tatacaaggt gcaacttcac attgtcttgg tcaaaaacttt gcaaagatgt ttgatatcac 300  
 ttctcgagaat gaaaagggtg aacgggtccat ggtgtggcag aactcttggg catacactac 360  
 cagctcgatt ggggtcatga taatgacaca tgglyatgac aagggttag tgctggcacc 420  
 aaaggtgacc tatccaggnc attgtatcct gtgccattaa agatgntgac acaacagcta 480  
 ttaaaggggc gtcgagcggc gttacacett gaccaactgg atcggnagat ttgatnccgt 540  
 gaaatacccc caggtggaaa atcn 564

<210> 30  
 <211> 152  
 <212> PRT  
 <213> Triticum aestivum

<400> 30  
 Ser Asn Pro Thr Pro Phe Ile Arg Ser Arg Glu Phe Leu Trp Gln Glu  
 1 5 10 15  
 Gly His Thr Val Phe Ala Thr Lys Glu Glu Ala Asp Glu Glu Val Leu  
 20 25 30  
 Gln Ile Leu Glu Leu Tyr Arg Arg Ile Tyr Glu Glu Phe Leu Ala Val  
 35 40 45  
 Pro Val Ser Lys Gly Arg Lys Ser Glu Met Glu Lys Phe Ala Gly Gly  
 50 55 60  
 Leu Tyr Thr Thr Ser Val Glu Ala Phe Ile Pro Asn Thr Gly Arg Gly  
 65 70 75 80  
 Ile Gln Gly Ala Thr Ser His Cys Leu Gly Gln Asn Phe Ala Lys Met  
 85 90 95  
 Phe Asp Ile Thr Phe Glu Asn Glu Lys Gly Glu Arg Ser Met Val Trp  
 100 105 110

Gln Asn Ser Trp Ala Tyr Thr Thr Arg Ser Ile Gly Val Met Ile Met  
 115 120 125

Thr His Gly Asp Asp Lys Gly Leu Val Leu Pro Pro Lys Val Thr Tyr  
 130 135 140

Pro Gly His Cys Ile Leu Cys His  
 145 150

<210> 31

<211> 1072

<212> PRT

<213> *Saccharomyces cerevisiae*

<400> 31

Met Ser Glu Ser Asn Ala His Phe Ser Phe Pro Lys Glu Glu Glu Lys  
 1 5 10 15

Val Leu Ser Leu Trp Asp Glu Ile Asp Ala Phe His Thr Ser Leu Glu  
 20 25 30

Leu Thr Lys Asp Lys Pro Glu Phe Ser Phe Phe Asp Gly Pro Pro Phe  
 35 40 45

Ala Thr Gly Thr Pro His Tyr Gly His Ile Leu Ala Ser Thr Ile Lys  
 50 55 60

Asp Ile Val Pro Arg Tyr Ala Thr Met Thr Gly His His Val Glu Arg  
 65 70 75 80

Arg Phe Gly Trp Asp Thr His Gly Val Pro Ile Glu His Ile Ile Asp  
 85 90 95

Lys Lys Leu Gly Ile Thr Gly Lys Asp Asp Val Phe Lys Tyr Gly Leu  
 100 105 110

Glu Asn Tyr Asn Asn Glu Cys Arg Ser Ile Val Met Thr Tyr Ala Ser  
 115 120 125

Asp Trp Arg Lys Thr Ile Gly Arg Leu Gly Arg Trp Ile Asp Phe Asp  
 130 135 140

Asn Asp Tyr Lys Thr Met Tyr Pro Ser Phe Met Glu Ser Thr Trp Trp  
 145 150 155 160

Ala Phe Lys Gln Leu His Glu Lys Gly Gln Val Tyr Arg Gly Phe Lys  
 165 170 175

Val Met Pro Tyr Ser Thr Gly Leu Thr Thr Pro Leu Ser Asn Phe Glu  
 180 185 190

Ala Gln Gln Asn Tyr Lys Asp Val Asn Asp Pro Ala Val Thr Ile Gly  
 195 200 205

Phe Asn Val Ile Gly Gln Glu Lys Thr Gln Leu Val Ala Trp Thr Thr  
 210 215 220

Thr Pro Trp Thr Leu Pro Ser Asn Leu Ser Leu Cys Val Asn Ala Asp  
 225 230 235 240



Phe Glu Tyr Val Lys Ile Tyr Asp Glu Thr Arg Asp Arg Tyr Phe Ile  
 245 250 255  
 Leu Leu Glu Ser Leu Ile Lys Thr Leu Tyr Lys Lys Pro Lys Asn Glu  
 260 265 270  
 Lys Tyr Lys Ile Val Glu Lys Ile Lys Gly Ser Asp Leu Val Gly Leu  
 275 280 285  
 Lys Tyr Glu Pro Leu Phe Pro Tyr Phe Ala Glu Gln Phe His Glu Thr  
 290 295 300  
 Ala Phe Arg Val Ile Ser Asp Asp Tyr Val Thr Ser Asp Ser Gly Thr  
 305 310 315 320  
 Gly Ile Val His Asn Ala Pro Ala Phe Gly Glu Glu Asp Asn Ala Ala  
 325 330 335  
 Cys Leu Lys Asn Gly Val Ile Ser Glu Asp Ser Val Leu Pro Asn Ala  
 340 345 350  
 Ile Asp Asp Leu Gly Arg Phe Thr Lys Asp Val Pro Asp Phe Glu Gly  
 355 360 365  
 Val Tyr Val Lys Asp Ala Asp Lys Leu Ile Ile Lys Tyr Leu Thr Asn  
 370 375 380  
 Thr Gly Asn Leu Leu Leu Ala Ser Gln Ile Arg His Ser Tyr Pro Phe  
 385 390 395 400  
 Cys Trp Arg Ser Asp Thr Pro Leu Leu Tyr Arg Ser Val Pro Ala Trp  
 405 410 415  
 Phe Val Arg Val Lys Asn Ile Val Pro Gln Met Leu Asp Ser Val Met  
 420 425 430  
 Lys Ser His Trp Val Pro Asn Thr Ile Lys Glu Lys Arg Phe Ala Asn  
 435 440 445  
 Trp Ile Ala Asn Ala Arg Asp Trp Asn Val Ser Arg Asn Arg Tyr Trp  
 450 455 460  
 Gly Thr Pro Ile Pro Leu Trp Val Ser Asp Asp Phe Glu Glu Val Val  
 465 470 475 480  
 Cys Val Gly Ser Ile Lys Glu Leu Glu Glu Leu Thr Gly Val Arg Asn  
 485 490 495  
 Ile Thr Asp Leu His Arg Asp Val Ile Asp Lys Leu Thr Ile Pro Ser  
 500 505 510  
 Lys Gln Gly Lys Gly Asp Leu Lys Arg Ile Glu Glu Val Phe Asp Cys  
 515 520 525  
 Trp Phe Glu Ser Gly Ser Met Pro Tyr Ala Ser Gln His Tyr Pro Phe  
 530 535 540  
 Glu Asn Thr Glu Lys Phe Asp Glu Arg Val Pro Ala Asn Phe Ile Ser  
 545 550 555 560

Glu Gly Leu Asp Gln Thr Arg Gly Trp Phe Tyr Thr Leu Ala Val Leu  
 565 570 575  
 Gly Thr His Leu Phe Gly Ser Val Pro Tyr Lys Asn Val Ile Val Ser  
 580 585 590  
 Gly Ile Val Leu Ala Ala Asp Gly Arg Lys Met Ser Lys Ser Leu Lys  
 595 600 605  
 Asn Tyr Pro Asp Pro Ser Ile Val Leu Asn Lys Tyr Gly Ala Asp Ala  
 610 615 620  
 Leu Arg Leu Tyr Leu Ile Asn Ser Pro Val Leu Lys Ala Glu Ser Leu  
 625 630 635 640  
 Lys Phe Lys Glu Glu Gly Val Lys Glu Val Val Ser Lys Val Leu Leu  
 645 650 655  
 Pro Trp Trp Asn Ser Phe Lys Phe Leu Asp Gly Gln Ile Ala Leu Leu  
 660 665 670  
 Lys Lys Met Ser Asn Ile Asp Phe Gln Tyr Asp Asp Ser Val Lys Ser  
 675 680 685  
 Asp Asn Val Met Asp Arg Trp Ile Leu Ala Ser Met Gln Ser Leu Val  
 690 695 700  
 Gln Phe Ile His Glu Glu Met Gly Gln Tyr Lys Leu Tyr Thr Val Val  
 705 710 715 720  
 Pro Lys Leu Leu Asn Phe Ile Asp Glu Leu Thr Asn Trp Tyr Ile Arg  
 725 730 735  
 Phe Asn Arg Arg Arg Leu Lys Gly Glu Asn Gly Val Glu Asp Cys Leu  
 740 745 750  
 Lys Ala Leu Asn Ser Leu Phe Asp Ala Leu Phe Thr Phe Val Arg Ala  
 755 760 765  
 Met Ala Pro Phe Thr Pro Phe Leu Ser Glu Ser Ile Tyr Leu Arg Leu  
 770 775 780  
 Lys Glu Tyr Ile Pro Glu Ala Val Leu Ala Lys Tyr Gly Lys Asp Gly  
 785 790 795 800  
 Arg Ser Val His Phe Leu Ser Tyr Pro Val Val Lys Lys Glu Tyr Phe  
 805 810 815  
 Asp Glu Ala Ile Glu Thr Ala Val Ser Arg Met Gln Ser Val Ile Asp  
 820 825 830  
 Leu Gly Arg Asn Ile Arg Glu Lys Lys Thr Ile Ser Leu Lys Thr Pro  
 835 840 845  
 Leu Lys Thr Leu Val Ile Leu His Ser Asp Glu Ser Tyr Leu Lys Asp  
 850 855 860  
 Val Glu Ala Leu Lys Asn Tyr Ile Ile Glu Glu Leu Asn Val Arg Asp  
 865 870 875 880

Val Val Ile Thr Ser Asp Glu Ala Lys Tyr Gly Val Glu Tyr Lys Ala  
885 890 895

Val Ala Asp Trp Pro Val Leu Gly Lys Lys Leu Lys Lys Asp Ala Lys  
900 905 910

Lys Val Lys Asp Ala Leu Pro Ser Val Thr Ser Glu Gln Val Arg Glu  
915 920 925

Tyr Leu Glu Ser Gly Lys Leu Glu Val Ala Gly Ile Glu Leu Val Lys  
930 935 940

Gly Asp Leu Asn Ala Ile Arg Gly Leu Pro Glu Ser Ala Val Gln Ala  
945 950 955 960

Gly Gln Glu Thr Arg Thr Asp Gln Asp Val Leu Ile Ile Met Asp Thr  
965 970 975

Asn Ile Tyr Ser Glu Leu Lys Ser Glu Gly Leu Ala Arg Glu Leu Val  
980 985 990

Asn Arg Ile Gln Lys Leu Arg Lys Lys Cys Gly Leu Glu Ala Thr Asp  
995 1000 1005

Asp Val Leu Val Glu Tyr Glu Leu Val Lys Asp Thr Ile Asp Phe Glu  
1010 1015 1020

Ala Ile Val Lys Glu His Phe Asp Met Leu Ser Lys Thr Cys Arg Ser  
1025 1030 1035 1040

Asp Ile Ala Lys Tyr Asp Gly Ser Lys Thr Asp Pro Ile Gly Asp Glu  
1045 1050 1055

Glu Gln Ser Ile Asn Asp Thr Ile Phe Lys Leu Lys Val Phe Lys Leu  
1060 1065 1070

<210> 32  
<211> 1266  
<212> PRT  
<213> Homo sapiens

<400> 32  
Met Ser Asn Lys Met Leu Gln Gln Val Pro Glu Asn Ile Asn Phe Pro  
1 5 10 15

Ala Glu Glu Glu Lys Ile Leu Glu Phe Trp Thr Glu Phe Asn Cys Phe  
20 25 30

Gln Glu Cys Leu Lys Gln Ser Lys His Lys Pro Lys Phe Thr Phe Tyr  
35 40 45

Asp Gly Pro Pro Phe Ala Thr Gly Leu Pro His Tyr Gly His Ile Leu  
50 55 60

Ala Gly Thr Ile Lys Asp Ile Val Thr Arg Tyr Ala His Gln Ser Gly  
65 70 75 80

Phe His Val Asp Arg Arg Phe Gly Trp Asp Cys His Gly Leu Pro Val  
85 90 95

Glu Tyr Glu Ile Asp Lys Thr Leu Gly Ile Arg Gly Pro Glu Asp Val  
 100 105 110  
 Ala Lys Met Gly Ile Thr Glu Tyr Asn Asn Gln Cys Arg Ala Ile Val  
 115 120 125  
 Met Arg Tyr Ser Ala Glu Trp Lys Ser Thr Val Ser Arg Leu Gly Arg  
 130 135 140  
 Trp Ile Asp Phe Asp Asn Asp Tyr Lys Thr Leu Tyr Pro Gln Phe Met  
 145 150 155 160  
 Glu Ser Val Trp Trp Val Phe Lys Gln Leu Tyr Asp Lys Gly Leu Val  
 165 170 175  
 Tyr Arg Gly Val Lys Val Met Pro Phe Ser Thr Ala Cys Asn Thr Pro  
 180 185 190  
 Leu Ser Asn Phe Glu Ser His Gln Asn Tyr Lys Asp Val Gln Asp Pro  
 195 200 205  
 Ser Val Phe Val Thr Phe Pro Leu Glu Glu Asp Glu Thr Val Ser Leu  
 210 215 220  
 Val Ala Trp Thr Thr Thr Pro Trp Thr Leu Pro Ser Asn Leu Ala Val  
 225 230 235 240  
 Cys Val Asn Pro Glu Met Gln Tyr Val Lys Ile Lys Asp Val Ala Arg  
 245 250 255  
 Gly Arg Leu Leu Ile Leu Met Glu Ala Arg Leu Ser Ala Leu Tyr Lys  
 260 265 270  
 Leu Glu Ser Asp Tyr Glu Ile Leu Glu Arg Phe Pro Gly Ala Tyr Leu  
 275 280 285  
 Lys Gly Lys Lys Tyr Arg Pro Leu Phe Asp Tyr Phe Leu Lys Cys Lys  
 290 295 300  
 Glu Asn Gly Ala Phe Thr Val Leu Val Asp Asn Tyr Val Lys Glu Glu  
 305 310 315 320  
 Glu Gly Thr Gly Val Val His Gln Ala Pro Tyr Phe Gly Ala Glu Asp  
 325 330 335  
 Tyr Arg Val Cys Met Asp Phe Asn Ile Ile Arg Lys Asp Ser Leu Pro  
 340 345 350  
 Val Cys Pro Val Asp Ala Ser Gly Cys Phe Thr Thr Glu Val Thr Asp  
 355 360 365  
 Phe Ala Gly Gln Tyr Val Lys Asp Ala Asp Lys Ser Ile Ile Arg Thr  
 370 375 380  
 Leu Lys Glu Gln Gly Arg Leu Leu Val Ala Thr Thr Phe Thr His Ser  
 385 390 395 400  
 Tyr Pro Phe Cys Trp Arg Ser Asp Thr Pro Leu Ile Tyr Lys Ala Val  
 405 410 415

Pro Ser Trp Phe Val Arg Val Glu Asn Met Val Asp Gln Leu Leu Arg  
420 425 430

Asn Asn Asp Leu Cys Tyr Trp Val Pro Glu Leu Val Arg Glu Lys Arg  
435 440 445

Phe Gly Asn Trp Leu Lys Asp Ala Arg Asp Trp Thr Ile Ser Arg Asn  
450 455 460

Arg Tyr Trp Gly Thr Pro Ile Pro Leu Trp Val Ser Asp Asp Phe Glu  
465 470 475 480

Glu Val Val Cys Ile Gly Ser Val Ala Glu Leu Glu Glu Leu Ser Gly  
485 490 495

Ala Lys Ile Ser Asp Leu His Arg Glu Ser Val Asp His Leu Thr Ile  
500 505 510

Pro Ser Arg Cys Gly Lys Gly Ser Leu His Arg Ile Ser Glu Val Phe  
515 520 525

Asp Cys Trp Phe Glu Ser Gly Ser Met Pro Tyr Ala Gln Val His Tyr  
530 535 540

Pro Phe Glu Asn Lys Arg Glu Phe Glu Asp Ala Phe Pro Ala Asp Phe  
545 550 555 560

Ile Ala Glu Gly Ile Asp Gln Thr Arg Gly Trp Phe Tyr Thr Leu Leu  
565 570 575

Val Leu Ala Thr Ala Leu Phe Gly Gln Pro Pro Phe Lys Asn Val Ile  
580 585 590

Val Asn Gly Leu Val Leu Ala Ser Asp Gly Gln Lys Met Ser Lys Arg  
595 600 605

Lys Lys Asn Tyr Pro Asp Pro Val Ser Ile Ile Gln Lys Tyr Gly Ala  
610 615 620

Asp Ala Leu Arg Leu Tyr Leu Ile Asn Ser Pro Val Val Arg Ala Glu  
625 630 635 640

Asn Leu Arg Phe Lys Glu Glu Gly Val Arg Asp Val Leu Lys Asp Val  
645 650 655

Leu Leu Pro Trp Tyr Asn Ala Tyr Arg Phe Leu Ile Gln Asn Val Leu  
660 665 670

Arg Leu Gln Lys Glu Glu Glu Ile Glu Phe Leu Tyr Asn Glu Asn Thr  
675 680 685

Val Arg Glu Ser Pro Asn Ile Thr Asp Arg Trp Ile Leu Ser Phe Met  
690 695 700

Gln Ser Leu Ile Gly Phe Phe Glu Thr Glu Met Ala Ala Tyr Arg Leu  
705 710 715 720

Tyr Thr Val Val Pro Arg Leu Val Lys Phe Val Asp Ile Leu Thr Asn  
725 730 735

Trp Tyr Val Arg Met Asn Arg Arg Arg Leu Lys Gly Glu Asn Gly Met  
 740 745 750  
 Glu Asp Cys Val Met Ala Leu Glu Thr Leu Phe Ser Val Leu Leu Ser  
 755 760 765  
 Leu Cys Arg Leu Met Ala Pro Tyr Thr Pro Phe Leu Thr Glu Leu Met  
 770 775 780  
 Tyr Gln Asn Leu Lys Val Leu Ile Asp Pro Val Ser Val Gln Asp Lys  
 785 790 795 800  
 Asp Thr Leu Ser Ile His Tyr Leu Met Leu Pro Arg Val Arg Glu Glu  
 805 810 815  
 Leu Ile Asp Lys Lys Thr Glu Ser Ala Val Ser Gln Met Gln Ser Val  
 820 825 830  
 Ile Glu Leu Gly Arg Val Ile Arg Asp Arg Lys Thr Ile Pro Ile Lys  
 835 840 845  
 Tyr Pro Leu Lys Glu Ile Val Val Ile His Gln Asp Pro Glu Ala Leu  
 850 855 860  
 Lys Asp Ile Lys Ser Leu Glu Lys Tyr Ile Ile Glu Glu Leu Asn Val  
 865 870 875 880  
 Arg Lys Val Thr Leu Ser Thr Asp Lys Asn Lys Tyr Gly Ile Arg Leu  
 885 890 895  
 Arg Ala Glu Pro Asp His Met Val Leu Gly Lys Arg Leu Lys Gly Ala  
 900 905 910  
 Phe Lys Ala Val Met Thr Ser Ile Lys Gln Leu Ser Ser Glu Glu Leu  
 915 920 925  
 Glu Gln Phe Gln Lys Thr Gly Thr Ile Val Val Glu Gly His Glu Leu  
 930 935 940  
 His Asp Glu Asp Ile Arg Leu Met Tyr Thr Phe Asp Gln Ala Thr Gly  
 945 950 955 960  
 Gly Thr Ala Gln Phe Glu Ala His Ser Asp Ala Gln Ala Leu Val Leu  
 965 970 975  
 Leu Asp Val Thr Pro Asp Gln Ser Met Val Asp Glu Gly Met Ala Arg  
 980 985 990  
 Glu Val Ile Asn Arg Ile Gln Lys Leu Arg Lys Lys Cys Asn Leu Val  
 995 1000 1005  
 Pro Thr Asp Glu Ile Thr Val Tyr Tyr Lys Ala Lys Ser Glu Gly Thr  
 1010 1015 1020  
 Tyr Leu Asn Ser Val Ile Glu Ser His Thr Glu Phe Ile Phe Thr Thr  
 1025 1030 1035 1040  
 Ile Lys Ala Pro Leu Lys Pro Tyr Pro Val Ser Pro Ser Asp Lys Val  
 1045 1050 1055

Leu Ile Gln Glu Lys Thr Gln Leu Lys Gly Ser Glu Leu Glu Ile Thr  
1060 1065 1070

Leu Thr Arg Gly Ser Ser Leu Pro Gly Pro Ala Cys Ala Tyr Val Asn  
1075 1080 1085

Leu Asn Ile Cys Ala Asn Gly Ser Glu Gln Gly Gly Val Leu Leu Leu  
1090 1095 1100

Glu Asn Pro Lys Gly Asp Asn Arg Leu Asp Leu Leu Lys Leu Lys Ser  
1105 1110 1115 1120

Val Val Thr Ser Ile Phe Gly Val Lys Asn Thr Glu Leu Ala Val Phe  
1125 1130 1135

His Asp Glu Thr Glu Ile Gln Asn Gln Thr Asp Leu Leu Ser Leu Ser  
1140 1145 1150

Gly Lys Thr Leu Cys Val Thr Ala Gly Ser Ala Pro Ser Leu Ile Asn  
1155 1160 1165

Ser Ser Ser Thr Leu Leu Cys Gln Tyr Ile Asn Leu Gln Leu Leu Asn  
1170 1175 1180

Ala Lys Pro Gln Glu Cys Leu Met Gly Thr Val Gly Thr Leu Leu Leu  
1185 1190 1195 1200

Glu Asn Pro Leu Gly Gln Asn Gly Leu Thr His Gln Gly Leu Leu Tyr  
1205 1210 1215

Glu Ala Ala Lys Val Phe Gly Leu Arg Ser Arg Lys Leu Lys Leu Phe  
1220 1225 1230

Leu Asn Glu Thr Gln Thr Gln Glu Ile Thr Glu Asp Ile Pro Val Lys  
1235 1240 1245

Thr Leu Asn Met Lys Thr Val Tyr Val Ser Val Leu Pro Thr Thr Ala  
1250 1255 1260

Asp Phe  
1265

<210> 33  
<211> 1262  
<212> PRT  
<213> Homo sapiens

<400> 33  
Met Leu Gln Gln Val Pro Glu Asn Ile Asn Phe Pro Ala Glu Glu Glu  
1 5 10 15

Lys Ile Leu Glu Phe Trp Thr Glu Phe Asn Cys Phe Gln Glu Cys Leu  
20 25 30

Lys Gln Ser Lys His Lys Pro Lys Phe Thr Phe Tyr Asp Gly Pro Pro  
35 40 45

Phe Ala Thr Gly Leu Pro His Tyr Gly His Ile Leu Ala Gly Thr Ile  
50 55 60

Lys Asp Ile Val Thr Arg Tyr Ala His Gln Ser Gly Phe His Val Asp  
 65 70 75 80  
 Arg Arg Phe Gly Trp Asp Cys His Gly Leu Pro Val Glu Tyr Glu Ile  
 85 90 95  
 Asp Lys Thr Leu Gly Ile Arg Gly Pro Glu Asp Val Ala Lys Met Gly  
 100 105 110  
 Ile Thr Glu Tyr Asn Asn Gln Cys Arg Ala Ile Val Met Arg Tyr Ser  
 115 120 125  
 Ala Glu Trp Lys Ser Thr Val Ser Arg Leu Gly Arg Trp Ile Asp Phe  
 130 135 140  
 Asp Asn Asp Tyr Lys Thr Leu Tyr Pro Gln Phe Met Glu Ser Val Trp  
 145 150 155 160  
 Trp Val Phe Lys Gln Leu Tyr Asp Lys Gly Leu Val Tyr Arg Gly Val  
 165 170 175  
 Lys Val Met Pro Phe Ser Thr Ala Cys Asn Thr Pro Leu Ser Asn Phe  
 180 185 190  
 Glu Ser His Gln Asn Tyr Lys Asp Val Gln Asp Pro Ser Val Phe Val  
 195 200 205  
 Thr Phe Pro Leu Glu Glu Asp Glu Thr Val Ser Leu Val Ala Trp Thr  
 210 215 220  
 Thr Thr Pro Trp Thr Leu Pro Ser Asn Leu Ala Val Cys Val Asn Pro  
 225 230 235 240  
 Glu Met Gln Tyr Val Lys Ile Lys Asp Val Ala Arg Gly Arg Leu Leu  
 245 250 255  
 Ile Leu Met Glu Ala Arg Leu Ser Ala Leu Tyr Lys Leu Glu Ser Asp  
 260 265 270  
 Tyr Glu Ile Leu Glu Arg Phe Pro Gly Ala Tyr Leu Lys Gly Lys Lys  
 275 280 285  
 Tyr Arg Pro Leu Phe Asp Tyr Phe Leu Lys Cys Lys Glu Asn Gly Ala  
 290 295 300  
 Phe Thr Val Leu Val Asp Asn Tyr Val Lys Glu Glu Glu Gly Thr Gly  
 305 310 315 320  
 Val Val His Gln Ala Pro Tyr Phe Gly Ala Glu Asp Tyr Arg Val Cys  
 325 330 335  
 Met Asp Phe Asn Ile Ile Arg Lys Asp Ser Leu Pro Val Cys Pro Val  
 340 345 350  
 Asp Ala Ser Gly Cys Phe Thr Thr Glu Val Thr Asp Phe Ala Gly Gln  
 355 360 365  
 Tyr Val Lys Asp Ala Asp Lys Ser Ile Ile Arg Thr Leu Lys Glu Gln  
 370 375 380



Gly Arg Leu Leu Val Ala Thr Thr Phe Thr His Ser Tyr Pro Phe Cys  
 385 390 395 400  
 Trp Arg Ser Asp Thr Pro Leu Ile Tyr Lys Ala Val Pro Ser Trp Phe  
 405 410 415  
 Val Arg Val Glu Asn Met Val Asp Gln Leu Leu Arg Asn Asn Asp Leu  
 420 425 430  
 Cys Tyr Trp Val Pro Glu Leu Val Arg Glu Lys Arg Phe Gly Asn Trp  
 435 440 445  
 Leu Lys Asp Ala Arg Asp Trp Thr Ile Ser Arg Asn Arg Tyr Trp Gly  
 450 455 460  
 Thr Pro Ile Pro Leu Trp Val Ser Asp Asp Phe Glu Glu Val Val Cys  
 465 470 475 480  
 Ile Gly Ser Val Ala Glu Leu Glu Glu Leu Ser Gly Ala Lys Ile Ser  
 485 490 495  
 Asp Leu His Arg Glu Ser Val Asp His Leu Thr Ile Pro Ser Arg Cys  
 500 505 510  
 Gly Lys Gly Ser Leu His Arg Ile Ser Glu Val Phe Asp Cys Trp Phe  
 515 520 525  
 Glu Ser Gly Ser Met Pro Tyr Ala Gln Val His Tyr Pro Phe Glu Asn  
 530 535 540  
 Lys Arg Glu Phe Glu Asp Ala Phe Pro Ala Asp Phe Ile Ala Glu Gly  
 545 550 555 560  
 Ile Asp Gln Thr Arg Gly Trp Phe Tyr Thr Leu Leu Val Leu Ala Thr  
 565 570 575  
 Ala Leu Phe Gly Gln Pro Pro Phe Lys Asn Val Ile Val Asn Gly Leu  
 580 585 590  
 Val Leu Ala Ser Asp Gly Gln Lys Met Ser Lys Arg Lys Lys Asn Tyr  
 595 600 605  
 Pro Asp Pro Val Ser Ile Ile Gln Lys Tyr Gly Ala Asp Ala Leu Arg  
 610 615 620  
 Leu Tyr Leu Ile Asn Ser Pro Val Val Arg Ala Glu Asn Leu Arg Phe  
 625 630 635 640  
 Lys Glu Glu Gly Val Arg Asp Val Leu Lys Asp Val Leu Leu Pro Trp  
 645 650 655  
 Tyr Asn Ala Tyr Arg Phe Leu Ile Gln Asn Val Leu Arg Leu Gln Lys  
 660 665 670  
 Glu Glu Glu Ile Glu Phe Leu Tyr Asn Glu Asn Thr Val Arg Glu Ser  
 675 680 685  
 Pro Asn Ile Thr Asp Arg Trp Ile Leu Ser Phe Met Gln Ser Leu Ile  
 690 695 700

Gly Phe Phe Glu Thr Glu Met Ala Ala Tyr Arg Leu Tyr Thr Val Val  
 705 710 715 720  
 Pro Arg Leu Val Lys Phe Val Asp Ile Leu Thr Asn Trp Tyr Val Arg  
 725 730 735  
 Met Asn Arg Arg Arg Leu Lys Gly Glu Asn Gly Met Glu Asp Cys Val  
 740 745 750  
 Met Ala Leu Glu Thr Leu Phe Ser Val Leu Leu Ser Leu Cys Arg Leu  
 755 760 765  
 Ile Ala Pro Tyr Thr Pro Phe Leu Thr Glu Leu Met Tyr Gln Asn Leu  
 770 775 780  
 Lys Val Leu Ile Asp Pro Val Ser Val Gln Asp Lys Asp Thr Leu Ser  
 785 790 795 800  
 Ile His Tyr Leu Met Leu Pro Arg Val Arg Glu Glu Leu Ile Asp Lys  
 805 810 815  
 Lys Thr Glu Ser Ala Val Ser Gln Met Gln Ser Val Ile Glu Leu Gly  
 820 825 830  
 Arg Val Ile Arg Asp Arg Lys Thr Ile Pro Ile Lys Tyr Pro Leu Lys  
 835 840 845  
 Glu Ile Val Val Ile His Gln Asp Pro Glu Ala Leu Lys Asp Ile Lys  
 850 855 860  
 Ser Leu Glu Lys Tyr Ile Ile Glu Glu Leu Asn Val Arg Lys Val Thr  
 865 870 875 880  
 Leu Ser Thr Asp Lys Asn Lys Tyr Gly Ile Arg Leu Arg Ala Glu Pro  
 885 890 895  
 Asp His Met Val Leu Gly Lys Arg Leu Lys Gly Ala Phe Lys Ala Val  
 900 905 910  
 Met Thr Ser Ile Lys Gln Leu Ser Ser Glu Glu Leu Glu Gln Phe Gln  
 915 920 925  
 Lys Thr Gly Thr Ile Val Val Glu Gly His Glu Leu His Asp Glu Asp  
 930 935 940  
 Ile Arg Leu Met Tyr Thr Phe Asp Gln Ala Thr Gly Gly Thr Ala Gln  
 945 950 955 960  
 Phe Glu Ala His Ser Asp Ala Gln Ala Leu Val Leu Leu Asp Val Thr  
 965 970 975  
 Pro Asp Gln Ser Met Val Asp Glu Gly Met Ala Arg Glu Val Ile Asn  
 980 985 990  
 Arg Ile Gln Lys Leu Arg Lys Lys Cys Asn Leu Val Pro Thr Asp Glu  
 995 1000 1005  
 Ile Thr Val Tyr Tyr Lys Ala Lys Ser Glu Gly Thr Tyr Leu Asn Ser  
 1010 1015 1020

Val Ile Glu Ser His Thr Glu Phe Ile Phe Thr Thr Ile Lys Ala Pro  
 1025 1030 1035 1040  
 Leu Lys Pro Tyr Pro Val Ser Pro Ser Asp Lys Val Leu Ile Gln Glu  
 1045 1050 1055  
 Lys Thr Gln Leu Lys Gly Ser Glu Leu Glu Ile Thr Leu Thr Arg Gly  
 1060 1065 1070  
 Ser Ser Leu Pro Gly Pro Ala Cys Ala Tyr Val Asn Leu Asn Ile Cys  
 1075 1080 1085  
 Ala Asn Gly Ser Glu Gln Gly Gly Val Leu Leu Leu Glu Asn Pro Lys  
 1090 1095 1100  
 Gly Asp Asn Arg Leu Asp Leu Leu Lys Leu Lys Ser Val Val Thr Ser  
 1105 1110 1115 1120  
 Ile Phe Gly Val Lys Asn Thr Glu Leu Ala Val Phe His Asp Glu Thr  
 1125 1130 1135  
 Glu Ile Gln Asn Gln Thr Asp Leu Leu Ser Leu Ser Gly Lys Thr Leu  
 1140 1145 1150  
 Cys Val Thr Ala Gly Ser Ala Pro Ser Leu Ile Asn Ser Ser Ser Thr  
 1155 1160 1165  
 Leu Leu Cys Gln Tyr Ile Asn Leu Gln Leu Leu Asn Ala Lys Pro Gln  
 1170 1175 1180  
 Glu Cys Leu Met Gly Thr Val Gly Thr Leu Leu Leu Glu Asn Pro Leu  
 1185 1190 1195 1200  
 Gly Gln Asn Gly Leu Thr His Gln Gly Leu Leu Tyr Glu Ala Ala Lys  
 1205 1210 1215  
 Val Phe Gly Leu Arg Ser Arg Lys Leu Lys Leu Phe Leu Asn Glu Thr  
 1220 1225 1230  
 Gln Thr Gln Glu Ile Thr Glu Asp Ile Pro Val Lys Thr Leu Asn Met  
 1235 1240 1245  
 Lys Thr Val Tyr Val Ser Val Leu Pro Thr Thr Ala Asp Phe  
 1250 1255 1260  
 <210> 34  
 <211> 626  
 <212> PRT  
 <213> Arabidopsis thaliana  
 <400> 34  
 Met Glu Gly Ala Ala Asp Gln Thr Thr Lys Ala Leu Ser Glu Leu Ala  
 1 5 10 15  
 Met Asp Ser Ser Thr Thr Leu Asn Ala Ala Glu Ser Ser Ala Gly Asp  
 20 25 30  
 Gly Ala Gly Pro Arg Ser Lys Asn Ala Leu Lys Lys Glu Gln Lys Met  
 35 40 45

Lys Gln Lys Glu Glu Glu Lys Arg Arg Lys Asp Glu Glu Lys Ala Glu  
 50 55 60  
 Lys Ala Lys Gln Ala Pro Lys Ala Ser Ser Gln Lys Ala Val Ala Ala  
 65 70 75 80  
 Asp Asp Glu Glu Met Asp Ala Thr Gln Tyr Tyr Glu Asn Arg Leu Lys  
 85 90 95  
 Tyr Leu Ala Ala Glu Lys Ala Lys Gly Glu Asn Pro Tyr Pro His Lys  
 100 105 110  
 Phe Ala Val Ser Met Ser Ile Pro Lys Tyr Ile Glu Thr Tyr Gly Ser  
 115 120 125  
 Leu Asn Asn Gly Asp His Val Glu Asn Ala Glu Glu Ser Leu Ala Gly  
 130 135 140  
 Arg Ile Met Ser Lys Arg Ser Ser Ser Ser Lys Leu Phe Phe Tyr Asp  
 145 150 155 160  
 Leu His Gly Asp Asp Phe Lys Val Gln Val Met Ala Asp Ala Ser Lys  
 165 170 175  
 Ser Gly Leu Asp Glu Ala Glu Phe Leu Lys Leu His Ser Asn Ala Lys  
 180 185 190  
 Arg Gly Asp Ile Val Gly Val Ile Gly Phe Pro Gly Lys Thr Lys Arg  
 195 200 205  
 Gly Glu Leu Ser Ile Phe Pro Arg Ser Phe Ile Leu Leu Ser His Cys  
 210 215 220  
 Leu His Met Met Pro Arg Lys Ala Asp Asn Val Asn Ala Lys Lys Pro  
 225 230 235 240  
 Glu Ile Trp Val Pro Gly Gln Thr Arg Asn Pro Glu Ala Tyr Val Leu  
 245 250 255  
 Lys Asp Gln Glu Ser Arg Tyr Arg Gln Arg His Leu Asp Met Ile Leu  
 260 265 270  
 Asn Val Glu Val Arg Gln Ile Phe Arg Thr Arg Ala Lys Ile Ile Ser  
 275 280 285  
 Tyr Val Arg Arg Phe Leu Asp Asn Lys Asn Phe Leu Glu Val Glu Thr  
 290 295 300  
 Pro Met Met Asn Met Ile Ala Gly Gly Ala Ala Ala Arg Pro Phe Val  
 305 310 315 320  
 Thr His His Asn Asp Leu Asp Met Arg Leu Tyr Met Arg Ile Ala Pro  
 325 330 335  
 Glu Leu Tyr Leu Lys Gln Leu Ile Val Gly Gly Leu Glu Arg Val Tyr  
 340 345 350  
 Glu Ile Gly Lys Gln Phe Arg Asn Glu Gly Ile Asp Leu Thr His Asn  
 355 360 365

Pro Glu Phe Thr Thr Cys Glu Phe Tyr Met Ala Phe Ala Asp Tyr Asn  
 370 375 380  
 Asp Leu Met Glu Met Thr Glu Val Met Leu Ser Gly Met Val Lys Glu  
 385 390 395 400  
 Leu Thr Gly Gly Tyr Lys Ile Lys Tyr Asn Ala Asn Gly Tyr Asp Lys  
 405 410 415  
 Asp Pro Ile Glu Ile Asp Phe Thr Pro Pro Phe Arg Arg Ile Glu Met  
 420 425 430  
 Ile Gly Glu Leu Glu Lys Val Ala Lys Leu Asn Ile Pro Lys Asp Leu  
 435 440 445  
 Ala Ser Glu Glu Ala Asn Lys Tyr Leu Ile Asp Ala Cys Ala Arg Phe  
 450 455 460  
 Asp Val Lys Cys Pro Pro Pro Gln Thr Thr Ala Arg Leu Leu Asp Lys  
 465 470 475 480  
 Leu Val Gly Glu Phe Leu Glu Pro Thr Cys Val Asn Pro Thr Phe Ile  
 485 490 495  
 Ile Asn Gln Pro Glu Ile Met Ser Pro Leu Ala Lys Trp His Arg Ser  
 500 505 510  
 Lys Ser Gly Leu Thr Glu Arg Phe Glu Leu Phe Ile Asn Lys His Glu  
 515 520 525  
 Leu Cys Asn Ala Tyr Thr Glu Leu Asn Asp Pro Val Val Gln Arg Gln  
 530 535 540  
 Arg Phe Ala Asp Gln Leu Lys Asp Arg Gln Ser Gly Asp Asp Glu Ala  
 545 550 555 560  
 Met Ala Leu Asp Glu Thr Phe Cys Asn Ala Leu Glu Tyr Gly Leu Ala  
 565 570 575  
 Pro Thr Gly Gly Trp Gly Leu Gly Ile Asp Arg Leu Ser Met Leu Leu  
 580 585 590  
 Thr Asp Ser Leu Asn Ile Lys Glu Val Leu Phe Phe Pro Ala Met Arg  
 595 600 605  
 Pro Pro Gln Glu Glu Ser Ala Ala Ala Gln Ala Pro Leu Thr Glu Glu  
 610 615 620  
 Lys Lys  
 625  
 <210> 35  
 <211> 451  
 <212> PRT  
 <213> Homo sapiens  
 <400> 35  
 Met Val Gly Ser Ala Leu Arg Arg Gly Ala His Ala Tyr Val Tyr Leu  
 1 5 10 15

Val Ser Lys Ala Ser His Ile Ser Arg Gly His Gln His Gln Ala Trp  
 20 25 30  
 Gly Ser Arg Pro Pro Ala Ala Glu Cys Ala Thr Gln Arg Ala Pro Gly  
 35 40 45  
 Ser Val Val Glu Leu Leu Gly Lys Ser Tyr Pro Gln Asp Asp His Ser  
 50 55 60  
 Asn Leu Thr Arg Lys Val Leu Thr Arg Val Gly Arg Asn Leu His Asn  
 65 70 75 80  
 Gln Gln His His Pro Leu Trp Leu Ile Lys Glu Arg Val Lys Glu His  
 85 90 95  
 Phe Tyr Lys Gln Tyr Val Gly Arg Phe Gly Thr Pro Leu Phe Ser Val  
 100 105 110  
 Tyr Asp Asn Leu Ser Pro Val Val Thr Thr Trp Gln Asn Phe Asp Ser  
 115 120 125  
 Leu Leu Ile Pro Ala Asp His Pro Ser Arg Lys Lys Gly Asp Asn Tyr  
 130 135 140  
 Tyr Leu Asn Arg Thr His Met Leu Arg Ala His Thr Ser Ala His Gln  
 145 150 155 160  
 Trp Asp Leu Leu His Ala Gly Leu Asp Ala Phe Leu Val Val Gly Asp  
 165 170 175  
 Val Tyr Arg Arg Asp Gln Ile Asp Ser Gln His Tyr Pro Ile Phe His  
 180 185 190  
 Gln Leu Glu Ala Val Arg Leu Phe Ser Lys His Glu Leu Phe Ala Gly  
 195 200 205  
 Ile Lys Asp Gly Glu Ser Leu Gln Leu Phe Glu Gln Ser Ser Arg Ser  
 210 215 220  
 Ala His Lys Gln Glu Thr His Thr Met Glu Ala Val Lys Leu Val Glu  
 225 230 235 240  
 Phe Asp Leu Lys Gln Thr Leu Thr Arg Leu Met Ala His Leu Phe Gly  
 245 250 255  
 Asp Glu Leu Glu Ile Arg Trp Val Asp Cys Tyr Phe Pro Phe Thr His  
 260 265 270  
 Pro Ser Phe Glu Met Glu Ile Asn Phe His Gly Glu Trp Leu Glu Val  
 275 280 285  
 Leu Gly Cys Gly Val Met Glu Gln Gln Leu Val Asn Ser Ala Gly Ala  
 290 295 300  
 Gln Asp Arg Ile Gly Trp Ala Phe Gly Leu Gly Leu Glu Arg Leu Ala  
 305 310 315 320  
 Met Ile Leu Tyr Asp Ile Pro Asp Ile Arg Leu Phe Trp Cys Glu Asp  
 325 330 335

Glu Arg Phe Leu Lys Gln Phe Cys Val Ser Asn Ile Asn Gln Lys Val  
 340 345 350

Lys Phe Gln Pro Leu Ser Lys Tyr Pro Ala Val Ile Asn Asp Ile Ser  
 355 360 365

Phe Trp Leu Pro Ser Glu Asn Tyr Ala Glu Asn Asp Phe Tyr Asp Leu  
 370 375 380

Val Arg Thr Ile Gly Gly Asp Leu Val Glu Lys Val Asp Leu Ile Asp  
 385 390 395 400

Lys Phe Val His Pro Lys Thr His Lys Thr Ser His Cys Tyr Arg Ile  
 405 410 415

Thr Tyr Arg His Met Glu Arg Thr Leu Ser Gln Arg Glu Val Arg His  
 420 425 430

Ile His Gln Ala Leu Gln Glu Ala Ala Val Gln Leu Leu Gly Val Glu  
 435 440 445

Gly Arg Phe  
 450

<210> 36  
 <211> 503  
 <212> PRT  
 <213> *Saccharomyces cerevisiae*

<400> 36  
 Met Ser Asp Phe Gln Leu Glu Ile Leu Lys Lys Leu Asp Glu Leu Asp  
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Glu Ile Lys Ser Thr Leu Ala Thr Phe Pro Gln His Gly Ser Gln Asp  
 20 25 30

Val Leu Ser Ala Leu Asn Ser Leu Lys Ala His Asn Lys Leu Glu Phe  
 35 40 45

Ser Lys Val Asp Thr Val Thr Tyr Asp Leu Thr Lys Glu Gly Ala Gln  
 50 55 60

Ile Leu Asn Glu Gly Ser Tyr Glu Ile Lys Leu Val Lys Leu Ile Gln  
 65 70 75 80

Glu Leu Gly Gln Leu Gln Ile Lys Asp Val Met Ser Lys Leu Gly Pro  
 85 90 95

Gln Val Gly Lys Val Gly Gln Ala Arg Ala Phe Lys Asn Gly Trp Ile  
 100 105 110

Ala Lys Asn Ala Ser Asn Glu Leu Glu Leu Ser Ala Lys Leu Gln Asn  
 115 120 125

Thr Asp Leu Asn Glu Leu Thr Asp Glu Thr Gln Ser Ile Leu Ala Gln  
 130 135 140

Ile Lys Asn Asn Ser His Leu Asp Ser Ile Asp Ala Lys Ile Leu Asn  
 145 150 155 160

Asp Leu Lys Lys Arg Lys Leu Ile Ala Gln Gly Lys Ile Thr Asp Phe  
 165 170 175  
 Ser Val Thr Lys Gly Pro Glu Phe Ser Thr Asp Leu Thr Lys Leu Glu  
 180 185 190  
 Thr Asp Leu Thr Ser Asp Met Val Ser Thr Asn Ala Tyr Lys Asp Leu  
 195 200 205  
 Lys Phe Lys Pro Tyr Asn Phe Asn Ser Gln Gly Val Gln Ile Ser Ser  
 210 215 220  
 Gly Ala Leu His Pro Leu Asn Lys Val Arg Glu Glu Phe Arg Gln Ile  
 225 230 235 240  
 Phe Phe Ser Met Gly Phe Thr Glu Met Pro Ser Asn Gln Tyr Val Glu  
 245 250 255  
 Thr Gly Phe Trp Asn Phe Asp Ala Leu Tyr Val Pro Gln Gln His Pro  
 260 265 270  
 Ala Arg Asp Leu Gln Asp Thr Phe Tyr Ile Lys Asp Pro Leu Thr Ala  
 275 280 285  
 Glu Leu Pro Asp Asp Lys Thr Tyr Met Asp Asn Ile Lys Ala Val His  
 290 295 300  
 Glu Gln Gly Arg Phe Gly Ser Ile Gly Tyr Arg Tyr Asn Trp Lys Pro  
 305 310 315 320  
 Glu Glu Cys Gln Lys Leu Val Leu Arg Thr His Ser Thr Ala Ile Ser  
 325 330 335  
 Ala Arg Met Leu His Asp Leu Ala Lys Asp Pro Lys Pro Thr Arg Leu  
 340 345 350  
 Phe Ser Ile Asp Arg Val Phe Arg Asn Glu Ala Val Asp Ala Thr His  
 355 360 365  
 Leu Ala Glu Phe His Gln Val Glu Gly Val Leu Ala Asp Tyr Asn Ile  
 370 375 380  
 Thr Leu Gly Asp Leu Ile Lys Phe Met Glu Glu Phe Phe Glu Arg Met  
 385 390 395 400  
 Gly Val Thr Gly Leu Arg Phe Lys Pro Thr Tyr Asn Pro Tyr Thr Glu  
 405 410 415  
 Pro Ser Met Glu Ile Phe Ser Trp His Glu Gly Leu Gln Lys Trp Val  
 420 425 430  
 Glu Ile Gly Asn Ser Gly Met Phe Arg Pro Glu Met Leu Glu Ser Met  
 435 440 445  
 Gly Leu Pro Lys Asp Leu Arg Val Leu Gly Trp Gly Leu Ser Leu Glu  
 450 455 460  
 Arg Pro Thr Met Ile Lys Tyr Lys Val Gln Asn Ile Arg Glu Leu Leu  
 465 470 475 480



Gly His Lys Val Ser Leu Asp Phe Ile Glu Thr Asn Pro Ala Ala Arg  
 485 490 495

Leu Asp Glu Asp Leu Tyr Glu  
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<210> 37  
 <211> 1440  
 <212> PRT  
 <213> Homo sapiens

<400> 37  
 Met Glu His Thr Glu Ile Asp His Trp Leu Glu Phe Ser Ala Thr Lys  
 1 5 10 15

Leu Ser Ser Cys Asp Ser Phe Thr Ser Thr Ile Asn Glu Leu Asn His  
 20 25 30

Cys Leu Ser Leu Arg Thr Tyr Leu Val Gly Asn Ser Leu Ser Leu Ala  
 35 40 45

Asp Leu Cys Val Trp Ala Thr Leu Lys Gly Asn Ala Ala Trp Gln Glu  
 50 55 60

Gln Leu Lys Gln Lys Lys Ala Pro Val His Val Lys Arg Trp Phe Gly  
 65 70 75 80

Phe Leu Glu Ala Gln Gln Ala Phe Gln Ser Val Gly Thr Lys Trp Asp  
 85 90 95

Val Ser Thr Thr Lys Ala Arg Val Ala Pro Glu Lys Lys Gln Asp Val  
 100 105 110

Gly Lys Phe Val Glu Leu Pro Gly Ala Glu Met Gly Lys Val Thr Val  
 115 120 125

Arg Phe Pro Pro Glu Ala Ser Gly Tyr Leu His Ile Gly His Ala Lys  
 130 135 140

Ala Ala Leu Leu Asn Gln His Tyr Gln Val Asn Phe Lys Gly Lys Leu  
 145 150 155 160

Ile Met Arg Phe Asp Asp Thr Asn Pro Glu Lys Glu Lys Glu Asp Phe  
 165 170 175

Glu Lys Val Ile Leu Glu Asp Val Ala Met Leu His Ile Lys Pro Asp  
 180 185 190

Gln Phe Thr Tyr Thr Ser Asp His Phe Glu Thr Ile Met Lys Tyr Ala  
 195 200 205

Glu Lys Leu Ile Gln Glu Gly Lys Ala Tyr Val Asp Asp Thr Pro Ala  
 210 215 220

Glu Gln Met Lys Ala Glu Arg Glu Gln Arg Ile Glu Ser Lys His Arg  
 225 230 235 240

Lys Asn Pro Ile Glu Lys Asn Leu Gln Met Trp Glu Glu Met Lys Lys  
 245 250 255

Gly Ser Gln Phe Gly His Ser Cys Cys Leu Arg Ala Lys Ile Asp Met  
 260 270  
 Ser Ser Asn Asn Gly Cys Met Arg Asp Pro Thr Leu Tyr Arg Cys Lys  
 275 280 285  
 Ile Gln Pro His Pro Arg Thr Gly Asn Lys Tyr Asn Val Tyr Pro Thr  
 290 295 300  
 Tyr Asp Phe Ala Cys Pro Ile Val Asp Ser Ile Glu Gly Val Thr His  
 305 310 315 320  
 Ala Leu Arg Thr Thr Glu Tyr His Asp Arg Asp Glu Gln Phe Tyr Trp  
 325 330 335  
 Ile Ile Glu Ala Leu Gly Ile Arg Lys Pro Tyr Ile Trp Glu Tyr Ser  
 340 345 350  
 Arg Leu Asn Leu Asn Asn Thr Val Leu Ser Lys Arg Lys Leu Thr Trp  
 355 360 365  
 Phe Val Asn Glu Gly Leu Val Asp Gly Trp Asp Asp Pro Arg Phe Pro  
 370 375 380  
 Thr Val Arg Gly Val Leu Arg Arg Gly Met Thr Val Glu Gly Leu Lys  
 385 390 395 400  
 Gln Phe Ile Ala Ala Gln Gly Ser Ser Arg Ser Val Val Asn Met Glu  
 405 410 415  
 Trp Asp Lys Ile Trp Ala Phe Asn Lys Lys Val Ile Asp Pro Val Ala  
 420 425 430  
 Pro Arg Tyr Val Ala Leu Leu Lys Lys Glu Val Ile Pro Val Asn Val  
 435 440 445  
 Pro Glu Ala Gln Glu Glu Met Lys Glu Val Ala Lys His Pro Lys Asn  
 450 455 460  
 Pro Glu Val Gly Leu Lys Pro Val Trp Tyr Ser Pro Lys Val Phe Ile  
 465 470 475 480  
 Glu Gly Ala Asp Ala Glu Thr Phe Ser Glu Gly Glu Met Val Thr Phe  
 485 490 495  
 Ile Asn Trp Gly Asn Leu Asn Ile Thr Lys Ile His Lys Asn Ala Asp  
 500 505 510  
 Gly Lys Ile Ile Ser Leu Asp Ala Lys Phe Asn Leu Glu Asn Lys Asp  
 515 520 525  
 Tyr Lys Lys Thr Thr Lys Val Thr Trp Leu Ala Glu Thr Thr His Ala  
 530 535 540  
 Leu Pro Ile Pro Val Ile Cys Val Thr Tyr Glu His Leu Ile Thr Lys  
 545 550 555 560  
 Pro Val Leu Gly Lys Asp Glu Asp Phe Lys Gln Tyr Val Asn Lys Asn  
 565 570 575

Ser Lys His Glu Glu Leu Met Leu Gly Asp Pro Cys Leu Lys Asp Leu  
 580 585 590  
 Lys Lys Gly Asp Ile Ile Gln Leu Gln Arg Arg Gly Phe Phe Ile Cys  
 595 600 605  
 Asp Gln Pro Tyr Glu Pro Val Ser Pro Tyr Ser Cys Lys Glu Ala Pro  
 610 615 620  
 Cys Val Leu Ile Tyr Ile Pro Asp Gly His Thr Lys Glu Met Pro Thr  
 625 630 635 640  
 Ser Gly Ser Lys Glu Lys Thr Lys Val Glu Ala Thr Lys Asn Glu Thr  
 645 650 655  
 Ser Ala Pro Phe Lys Glu Arg Pro Thr Pro Ser Leu Asn Asn Asn Cys  
 660 665 670  
 Thr Thr Ser Glu Asp Ser Leu Val Leu Tyr Asn Arg Val Ala Val Gln  
 675 680 685  
 Gly Asp Val Val Arg Glu Leu Lys Ala Lys Lys Ala Pro Lys Glu Asp  
 690 695 700  
 Val Asp Ala Ala Val Lys Gln Leu Leu Ser Leu Lys Ala Glu Tyr Lys  
 705 710 715 720  
 Glu Lys Thr Gly Gln Glu Tyr Lys Pro Gly Asn Pro Pro Ala Glu Ile  
 725 730 735  
 Gly Gln Asn Ile Ser Ser Asn Ser Ser Ala Ser Ile Leu Glu Ser Lys  
 740 745 750  
 Ser Leu Tyr Asp Glu Val Ala Ala Gln Gly Glu Val Val Arg Lys Leu  
 755 760 765  
 Lys Ala Glu Lys Ser Pro Lys Ala Lys Ile Asn Glu Ala Val Glu Cys  
 770 775 780  
 Leu Leu Ser Leu Lys Ala Gln Tyr Lys Glu Lys Thr Gly Lys Glu Tyr  
 785 790 795 800  
 Ile Pro Gly Gln Pro Pro Leu Ser Gln Ser Ser Asp Ser Ser Pro Thr  
 805 810 815  
 Arg Asn Ser Glu Pro Ala Gly Leu Glu Thr Pro Glu Ala Lys Val Leu  
 820 825 830  
 Phe Asp Lys Val Ala Ser Gln Gly Glu Val Val Arg Lys Leu Lys Thr  
 835 840 845  
 Glu Lys Ala Pro Lys Asp Gln Val Asp Ile Ala Val Gln Glu Leu Leu  
 850 855 860  
 Gln Leu Lys Ala Gln Tyr Lys Ser Leu Ile Gly Val Glu Tyr Lys Pro  
 865 870 875 880  
 Val Ser Ala Thr Gly Ala Glu Asp Lys Asp Lys Lys Lys Lys Glu Lys  
 885 890 895

Glu Asn Lys Ser Glu Lys Gln Asn Lys Pro Gln Lys Gln Asn Asp Gly  
 900 905 910

Gln Arg Lys Asp Pro Ser Lys Asn Gln Gly Gly Gly Leu Ser Ser Ser  
 915 920 925

Gly Ala Gly Glu Gly Gln Gly Pro Lys Lys Gln Thr Arg Leu Gly Leu  
 930 935 940

Glu Ala Lys Lys Glu Glu Asn Leu Ala Asp Trp Tyr Ser Gln Val Ile  
 945 950 955 960

Thr Lys Ser Glu Met Ile Glu Tyr His Asp Ile Ser Gly Cys Tyr Ile  
 965 970 975

Leu Arg Pro Trp Ala Tyr Ala Ile Trp Glu Ala Ile Lys Asp Phe Phe  
 980 985 990

Asp Ala Glu Ile Lys Lys Leu Gly Val Glu Asn Cys Tyr Phe Pro Met  
 995 1000 1005

Phe Val Ser Gln Ser Ala Leu Glu Lys Glu Lys Thr His Val Ala Asp  
 1010 1015 1020

Phe Ala Pro Glu Val Ala Trp Val Thr Arg Ser Gly Lys Thr Glu Leu  
 1025 1030 1035 1040

Ala Glu Pro Ile Ala Ile Arg Pro Thr Ser Glu Thr Val Met Tyr Pro  
 1045 1050 1055

Ala Tyr Ala Lys Trp Val Gln Ser His Arg Asp Leu Pro Ile Lys Leu  
 1060 1065 1070

Asn Gln Trp Cys Asn Val Val Arg Trp Glu Phe Lys His Pro Gln Pro  
 1075 1080 1085

Phe Leu Arg Thr Arg Glu Phe Leu Trp Gln Glu Gly His Ser Ala Phe  
 1090 1095 1100

Ala Thr Met Glu Glu Ala Ala Glu Glu Val Leu Gln Ile Leu Asp Leu  
 1105 1110 1115 1120

Tyr Ala Gln Val Tyr Glu Glu Leu Leu Ala Ile Pro Val Val Lys Gly  
 1125 1130 1135

Arg Lys Thr Glu Lys Glu Lys Phe Ala Gly Gly Asp Tyr Thr Thr  
 1140 1145 1150

Ile Glu Ala Phe Ile Ser Ala Ser Gly Arg Ala Ile Gln Gly Gly Thr  
 1155 1160 1165

Ser His His Leu Gly Gln Asn Phe Ser Lys Met Phe Glu Ile Val Phe  
 1170 1175 1180

Glu Asp Pro Lys Ile Pro Gly Glu Lys Gln Phe Ala Tyr Gln Asn Ser  
 1185 1190 1195 1200

Trp Gly Leu Thr Thr Arg Thr Ile Gly Val Met Thr Met Val His Gly  
 1205 1210 1215

Asp Asn Met Gly Leu Val Leu Pro Pro Arg Val Ala Cys Val Gln Val  
 1220 1225 1230  
 Val Ile Ile Pro Cys Gly Ile Thr Asn Ala Leu Ser Glu Glu Asp Lys  
 1235 1240 1245  
 Glu Ala Leu Ile Ala Lys Cys Asn Asp Tyr Arg Arg Arg Leu Leu Ser  
 1250 1255 1260  
 Val Asn Ile Arg Val Arg Ala Asp Leu Arg Asp Asn Tyr Ser Pro Gly  
 1265 1270 1275 1280  
 Trp Lys Phe Asn His Trp Glu Leu Lys Gly Val Pro Ile Arg Leu Glu  
 1285 1290 1295  
 Val Gly Pro Arg Asp Met Lys Ser Cys Gln Phe Val Ala Val Arg Arg  
 1300 1305 1310  
 Asp Thr Gly Glu Lys Leu Thr Val Ala Glu Asn Glu Ala Glu Thr Lys  
 1315 1320 1325  
 Leu Gln Ala Ile Leu Glu Asp Ile Gln Val Thr Leu Phe Thr Arg Ala  
 1330 1335 1340  
 Ser Glu Asp Leu Lys Thr His Met Val Val Ala Asn Thr Met Glu Asp  
 1345 1350 1355 1360  
 Phe Gln Lys Ile Leu Asp Ser Gly Lys Ile Val Gln Ile Pro Phe Cys  
 1365 1370 1375  
 Gly Glu Ile Asp Cys Glu Asp Trp Ile Lys Lys Thr Thr Ala Arg Asp  
 1380 1385 1390  
 Gln Asp Leu Glu Pro Gly Ala Pro Ser Met Gly Ala Lys Ser Leu Cys  
 1395 1400 1405  
 Ile Pro Phe Lys Pro Leu Cys Glu Leu Gln Pro Gly Ala Lys Cys Val  
 1410 1415 1420  
 Cys Gly Lys Asn Pro Ala Lys Tyr Tyr Thr Leu Phe Gly Arg Ser Tyr  
 1425 1430 1435 1440